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A

TREATISE

ON

MIDWIFERY;

DEVELOPING

NEW PRINCIPLES,

WHICH TEND MATERIALLY TO

Lessen the Sufferings of the Patient,

AND

SHORTEN THE DURATION OF LABOUR.

BY JOHN POWER,

ACCOUCHEUR, &c.

Member of the Royal Medical Society of Edinburgh.

Juno Lucina, fer opem! TER. *Adelph.*

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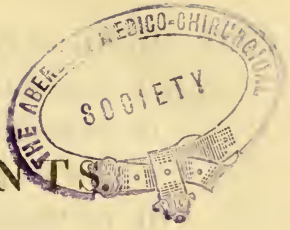

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INTRODUCTION.

THE leading facts which gave rise to the peculiar opinions which are advanced in the present treatise, arrested the Author's observation during the early period of his professional life. The inferences, which he was induced to draw from them, have led to practical attentions, which have, for several years, proved eminently successful in preventing and removing certain states of protracted parturition; and he has the satisfaction of believing, that he has been enabled thereby, to contribute materially to the safety, welfare, and comfort, of numerous objects of his care.

Under a full conviction of their utility, he has, at length, although not without the

greatest diffidence, and a strong sense of their imperfections, ventured to offer his opinions to the notice of his professional brethren; from whom, he doubts not, they will receive that candid attention which the high importance of the subject merits.

The present era is unparalleled throughout the previous history of human science, in the importance of the elucidations which the industry and enthusiasm of man have afforded, in regard to the operations of natural causes; and the contributions which the better intelligence of their principles has made to the advantages and luxuries of society.

Amongst other branches, medical science has not been neglected; and immense additions have been made to the general stock of information respecting the human system, and the nature, causes, prevention, and removal of its numerous morbid states.

The progress of the obstetric science does not, however, appear to have been corre-

pondent with the rapid improvement which has characterized other branches of the profession. In the practice of the art, numerous interesting facts have been accumulated, but its principles have received inconsiderable illustration. That much remains to perfect its science is evident, when it is considered that the most intelligent and experienced of its professors, not unfrequently, meet with cases which are perplexing, if not inexplicable to them; and the same uncertain states must have occurred to every practitioner of experience.

It appears singular, in the present age of abstruse inquiry, that the physiological and pathological researches into the nature of parturition, should have gone little farther than to ascertain that the parturient efforts consisted of contractions of muscular fibres; to the supposititious effects of these muscular contractions, the ostensible phænomena of parturition, as manifested in the production

of its almost universal concomitant and presumed characteristic, pain, have been referred, without noticing, or noticing in any efficient manner, the modifications of that energetic principle upon which those contractions depended, and which could not but be essentially connected with its various deviations and apparent anomalies.

The importance of a more perfect intelligence of the parturient principle, and its modes of operating, did not, indeed, escape the penetrating mind of the late Dr. Denman. He expressly states, that it would probably be of infinite use in practice; he even divides its modifications into three kinds, the genuine, adventitious, and sympathetic; considers the latter as the sources of deviation, and concludes by referring the difficulties attendant upon parturition to either the imperfect action of the uterus, or the resistance made to that action; and inculcating that the chief objects of midwifery were to assist that

action, and remove the impediments to its effects*.

Yet, notwithstanding, an attentive consideration of Dr. Denman's work will render it fully evident, that he did not, in any correct or efficient manner, prosecute an inquiry into the pathologic indications which had thus presented themselves; on the contrary, neglecting the investigation of those genuine, adventitious, and sympathetic states, he proceeds upon the favourite and popular, but fallacious, opinion, that pain is an essential and constituent part of labour, and synonymous, or nearly so, with uterine action, and that no pain in labour was fruitless, or without its effect in promoting the accomplishment of the process†.

Had a cautious investigation been conducted into the principles of the process, it would have been found that the assumed

* Denman, Chap. V. Sec. XI.

† Ibid, Chap. VIII. Sec. III.

characteristic of pain was, in fact, no characteristic at all, and the most distressing states of it totally unconnected or uncombined with uterine contraction.

The sufficiently correct analogies of the parturition of the lower classes of animals might have suggested a similar inference, as their parturient contractions are professedly without pain. In short, it would have been demonstrated that the pains of labour were strictly unessential to the process, and dependent, in the most distressing instances, upon actions of the nervous system adventitiously, and sympathetically, influencing that modification of the nervous energy which constitutes the parturient principle.

That the parturient principle consists of a modification of the nervous power, determined to the uterus for the purpose of actuating its muscles at the period of parturition, cannot be denied. Why, then, should it not be influenced by the same laws, and

subject to the same deranged and morbid actions, as affect all other modifications of the same power, whether actuating the vital, auimal, or mental functions? It is the object of the present essay to shew that it is affected by them, and that the effects comprise a great variety of the more interesting phænomena, and deviations which parturition presents, particularly such as are productive of its most protracted states.

In prosecuting this important subject, it is a source of gratification to the Author, that the views which he has been led to embrace have originated from an observation of facts, and from thence been formed into their systematic shape, by a careful induction of such inferences as he conceived the nature of those facts to authorize.

Where hypothesis has been indulged in, he feels happy in the conviction that the admission or rejection of such imperfect view, will neither affect the more important

principles of his doctrines, or their utility in application to practical purposes. Thus, for instance, the existence of extra-uterine paroxysms having been established beyond the possibility of contradiction, as well as their inefficacy, and the mode of obviating them, it is of minor importance whether they do, or do not, depend upon the hypothetical principle of metastasis. Objections of this nature may please sticklers, but cannot invalidate the fact, and its practical consequences. Until the nature of the nervous principle is better understood, this is a point which must rest upon doubtful grounds; and, in justice to the Author, it must be admitted that the deficiency is rather to be attributed to the imperfection of our science, than his own defaults. Whether, under the present state of our knowledge of the cerebral system, better explanations can be given, he humbly submits to the opinion of his professional brethren; he is fully sensible of the many

imperfections of his attempt, and will be happy to find the subject otherways elucidated, in the fullest consonance with nature and reason.

It may now be desirable to enter into some explanation of the plan upon which the present essay will be conducted.

It is proposed to notice, with brevity, the anatomical structure connected with parturition, as it will be found admirably detailed in the writings of many eminent authors; indeed, it would have been entirely passed over, but that some parts appeared to offer essential illustrations of the opinions of the Author, particularly as relating to the distribution of the nervous structure.

In the ensuing Chapter devoted to the Physiology of Parturition, it has been a leading object to present the essential features of the parturient actions, in their simplest and most natural form, divested of all connexion with their pathology or states of deviation; and to inquire into their causes and nature.

The pathology of parturition, comprising the various deviations from the natural state, will, in the next place, receive a full and general consideration. These will be divided into three kinds, as connected with the action of the parturient principle, or as affected by mechanical obstruction, or by accidental causes.

It is to the consideration of the first division that the inquiry will be principally directed; and it is hoped that it will be found to present a mass of interesting matter, which will elucidate the better intelligence of the parturient principle and its states of derangement.

The above consideration will be found to present so many new features, and to combine so comprehensive and original a view of the varieties of parturition, that it would be found difficult, if not impossible, to refer them to any pre-existent arrangement. The Author has, therefore, been induced to comprise them under such new synoptical arrangement, as has been found naturally to result from his pre-

vious considerations. This synopsis will be formed, as far as relates to its classification, in conformity as much as possible with the most approved principles upon which such systems have been constituted. It has been held in view to adopt the nomenclature of previous authors, although the power of doing this has necessarily been very limited; and an endeavour has been made to identify the different genera with the varieties of parturition previously established, by the attachment of synonyms.

The above will conclude the first part of the treatise. In the succeeding one, a practical consideration will be entered into of the genera included in the above arrangement, and which are connected with the modifications and derangements of the parturient energy, in the course of which their history, causes, and treatment, will be developed, and the doctrines upon which they are founded more fully illustrated.

It is then proposed, with a view to further illustration, to attach, in the form of an Appendix, a few cases taken from the Author's practice.

The practical inquiry of the present essay will not be extended to the genera of deviations arising from mechanical or accidental causes; the consideration of these is reserved for a future attempt, should the present receive the sanction of the profession.

The Author has particularly to regret, that the contracted library of a country practitioner, and his exclusion from those opportunities of remedying the deficiency which the metropolis, or even a large provincial town, would have afforded, have prevented him from making the full references and illustrations which he would have wished; he cannot, however, avoid expressing the obligations he feels himself under to the excellent works of Drs. Hunter, Denman, Hamilton, Merriman, and Mr. Burns, as well as others,

which may truly be considered as comprising every thing important in the art.

It remains for him to repeat the consciousness he entertains of the numerous imperfections with which his essay abounds, and to entreat for the candid and liberal indulgence of his professional readers upon that head. For obtruding it upon their notice, he trusts that he shall have credit given him of having been actuated by the purest motives; he likewise hopes he may be allowed to anticipate, that although his attempt will be far, indeed, from raising the obstetric art to a state of perfection, it will nevertheless be deemed to have contributed something to its improvement, and consequently not to deserve the fate prescribed by the Horatian rule—

"Si paulum a summo decessit, vergit ad imum."

Market Bosworth, Leicestershire,
Jan. 1819.

A

TREATISE ON MIDWIFERY.

PART I.

ON THE

DOCTRINES OF PARTURITION.

THE

DOCTRINES OF PARTURITION.

"Quamvis enim iter novum et arduum sit, naturam scrutando, potius ex rebus istis, quam libros evolvendo ex philosophorum placitis erudiri; illud tamen ad naturalis philosophiæ arcana apertius, minusque in fraudem ducens agnoscendum est——Natura ipsa adeunda est, et semita, quam nobis monstrat, insistendum."

Harveii de Generat. Animal. Præfat.

"Notwithstanding it may prove a novel and arduous undertaking to investigate nature by a developement of the facts she presents, rather than by grounding our knowledge upon the opinions advanced in the writings of philosophers; yet it must be admitted that such method is less liable to error, and more likely to disclose the secrets of natural philosophy——Nature herself must be penetrated into, and the path which she indicates, pursued."

A

TREATISE ON MIDWIFERY,

&c.

CHAPTER I.

OF THE ANATOMICAL STRUCTURE CONNECTED WITH PARTURITION.

SECTION I.

Of the bony Structure.

THE combination of bony parts connected with the uterine system, comprises what has been termed the pelvis, which is composed of four bones, *viz.*, the os sacrum, the os coccygis, and the two ossa innominata; these should be naturally disposed into a shape resembling a basin, whence its name, the posterior part of which is formed by the os sacrum, and os coccygis; the lateral parts by the ossa innominata, and the anterior one by the junction of the latter bones in front, constituting what has been termed the pubis. For a more particular description of the individual bones

entering into the formation of the pelvis, the reader is referred to Dr. Denman's valuable work on the Practice of Midwifery.

The pelvis, thus formed, is of an oval shape, and has two apertures; one on the superior and anterior, the other on the inferior and posterior part. The dimensions of these apertures should be such as will admit of the passage of the head of an average sized child, at its full time. To allow of the above, the following dimensions have been considered as most correct, and as constituting a standard well-formed pelvis.

The superior aperture, or brim, should measure in its longest diameter, which is from side to side, five inches and a quarter, while from before to behind, it should measure four inches and a half.

The inferior aperture, on the contrary, has its longest diameter from before to behind, measuring, when the os coccygis is pressed back by the descending head of the child, five inches or more; while, in a lateral direction, its diameter will be found very little to exceed four inches.

Any material deviation from the above proportions, is to be considered as a state of deformity, and will be productive of more or less derangement of the process of parturition. The most common states of deformity are the following:—In the upper aperture, the os sacrum, or lower lumbar vertebræ, may approximate too near to the pubis. In the

lower aperture, the protuberant parts of the ossa innominata, which have been termed the tuberosities of the ischia, may approach so as to contract the passage.

A more particular description of these deranged states is unnecessary, as it is not proposed, in the present Treatise, to enter into any consideration of the variations of practice originating from them.

SECTION II.

OF THE SEXUAL ORGANS IN THE UNIMPREGNATED STATE.

The sexual organs of the human female, admit of consideration under the following heads:—

1. The ovaria and their appendages.
2. The uterus.
3. The vagina.
4. The external parts.

1. *The Ovaria and their Appendages.*

The ovaria are solely concerned in the production and impregnation of the embryo; their consideration is, therefore, foreign to our present inquiry.

2. *The Uterus.*

The uterus, situated in the pelvis, between the bladder and rectum, to each of which it is connected by cellular substance, is a dense viscus of a pyriform shape, consisting of a body and fundus, which may be supposed to resemble the thicker end and body of a pear, and of a cervix, which may be likened to the narrower end or neck; its size is various, in different subjects, and under

different circumstances; but in the virgin state it will seldom weigh more than two or three ounces. Its structure is hollow, containing a small triangular cavity, not larger than will hold an almond; this cavity is lined with a fine vascular membrane, which presents a rugous surface; it is of a compact substance, and very vascular, which vascularity is, however, much greater in the body and fundus, than at the cervix.

No direct evidence of muscular structure is to be found, although it must be presumed that such structure does exist.

The cervix, which is of lesser dimensions than the body, is connected with the vagina, into which it projects; its most projecting point is perforated by an opening, communicating with the internal cavity, which, from its resemblance to the mouth of a tench, has been termed os tincæ, but is more appropriately called the os uteri. The internal membrane, lining the cervix and os uteri, is beset with numerous follicular glands, which are capable of secreting a thick gelatinous mucus.

3. *The Vagina.*

The vagina is a membranous tube, leading from the external meatus to the cervix uteri, to the anterior part of, and around which, it is attached by its internal extremity. It is composed

of a strong membranous substance, corrugated into a number of rugæ or folds, which facilitate its distention in parturition; its texture throughout is exceedingly elastic, admitting of great dilatation; the degree of elasticity, however, varies in different subjects, according to constitution or age, or it may be rendered unyielding by disease. The internal membrane lining it, is throughout supplied with small follicular glands, which occasionally secrete a copious, mucous, and lubricating fluid.

4. *The external Parts.*

Of the external parts we need only briefly notice the external orifice, formed by the lower parts of the labia, and the perineum or space situated between that orifice and the anus, composed chiefly of common integument and cellular texture, and, like the vagina, very dilatable.

The Vascular System of the Uterine Organs

Is supplied by the spermatic and uterine arteries; the former of which are determined to the body and fundus of the uterus, the latter more immediately to its cervix and the vagina.

The ovaria, fallopian tubes, and upper parts of the uterus, receive nervous branches from the renal plexus and spermatic nerves, which are in-

timately connected with, and chiefly formed from, the great sympathetic nerves; these branches are noticed as being minute.

The lower part of the uterus, particularly its cervix and the vagina, are supplied by the hypogastric nerve, the main trunk of which divides near the middle of the sides of the pelvis, into two branches, the posterior and anterior. The former is expended upon the rectum, of which it forms the main supply; the latter is by far the largest, and spreads itself out like the expanded sticks of a fan, upon the whole side of the uterus and vagina; the upper branches pass obliquely upwards towards the fundus uteri; the less oblique or horizontal ones, are spread more directly upon the lower parts of the uterus, its cervix and orifice, while the remaining ones run obliquely downwards to the vagina. The greatest crowd or number of branches, however, go to the os tincæ and adjacent parts*. The uterine system is also plentifully supplied with lymphatics.

* See Dr. Hunter's *Description of the Gravid Uterus*, p. 25, from which the above account has been principally and almost *verbatim* taken.

SECTION III.

OF THE SEXUAL ORGANS IN THE IMPREGNATED AND GRAVID STATE.

Of the Structure of the Gravid Uterus.

The impregnated differs from the unimpregnated uterus in most material points. It is to the description of such variations, that the present section is appropriated. It is not, however, intended to note the whole progression of changes induced by pregnancy, but merely to describe the appearances which are found in its most gravid state, at the termination of the full period of uterogestation, and which are connected with the subsequent parturient actions.

The uterus, at the end of pregnancy, is found to have acquired a prodigious bulk, its fundus extending upwards to the stomach, and upper part of the diaphragm, and occupying the whole of the umbilical and epigastric regions; it approaches to an oviform figure, the fundus answering to the largest extremity of the egg. Its body and fundus are situated in the anterior part of the abdomen, so as to lie before the intestines, and in immediate contact with the parietes of the abdomen,

as extending from hip to hip, and through the epigastric region; the urinary bladder, however, which in its evacuated state, lies near to or under the pubes, will, in proportion to its degree of distention, occasionally occupy a larger or less space of the epigastric or umbilical region, being then situated anterior to the uterus, and intermediate to it and the abdominal parietes; the fundus uteri generally lies near the stomach, but in some cases is situated more obliquely forward, so that its centre projects forward between the stomach and umbilicus; in this case it must be obvious, that the cervix and os uteri will be pressed proportionately and obliquely backwards towards the sacrum.

The great enlargement of the uterus does not produce any alteration in the thickness of its parietes. The substance will, however, be found greater at the fundus than at the cervix, in consequence of the greater vascularity of that part, the placenta being commonly attached to it. The substance of the gravid uterus is much more loose, soft, and ductile, than in the unimpregnated state. It is composed of vascular tubes and bundles of fibres, connected by cellular texture; these bundles of fibres are admitted to be muscular, and are disposed concentrically, longitudinally, and in all manner of directions.

During the first four or five months of preg-

nancy, the increased growth of the uterus, has been chiefly, or entirely, confined to its body and fundus, the cervix remaining nearly in its primitive state; from the fifth month, however, a gradual distention of the cervix begins, which is not completed until immediately previous to the commencement of parturition, at which time, it becomes obliterated; during this period, the os uteri also retains its anterior, as well as posterior state of projection, which is only lost at the completion of the period of pregnancy.

Soon after impregnation is effected, the follicular glands within the cervix and orifice secrete a tough gelatinous mucus, which seals up the passage from the vagina into the internal cavity of the uterus; this remains until the parturient actions are about to commence, when it separates and is discharged.

The vascular and lymphatic systems become greatly enlarged, and it is probable that the nervous system proportionately participates.

Of the Contents of the Gravid Uterus.

The contents of the gravid uterus may (with the exception of the decidua membrane, which is an efflorescence or secretion of the internal membrane of the uterus) be considered as the production of impregnation, and as constituting the

matured ovum, which it is the grand object of the actions of parturition to expel. They consist of

1. The fœtus.
2. The placenta, with the umbilical cord.
3. The membranes.
4. The liquor amnii.

1. *Of the Fœtus.*

The average weight of a full grown fœtus, is from six to seven pounds. The relative proportions of the body and lower extremities, as compared with each other, are immaterial, but as compared with the head, they are more important. The fœtal head is much larger than any other part; it is also the first part expelled by the process of natural parturition, and in its expulsion, the actions of the propelling powers are carried to their highest acme. Its form is irregularly oval, having the longest diameter from the vertex to the chin, equal to near five inches; the shortest diameter is transverse, from the most prominent parts of the two parietal bones, and measures about three inches and a quarter; while from the vertex to the projection of the forehead, the length is four inches and a half. A comparison of these dimensions with the capacity of the pelvis, will shew that the one is relatively proportionate to admit the passage of the other; and also, that the most favourable point of presentation will be the ver-

tex applied directly to the superior aperture of the pelvis; this position nature has providentially adopted, the fœtus being generally found situated in the uterus, with its head not only downwards, but with the vertex turned in such way, as to enter the pelvis in the most favourable manner.

The bulging part of the head, is composed of a number of bones, connected loosely together by what are termed sutures; these it may be proper to describe, as the distinction of them, during parturition, is of essential service in ascertaining the position of the child, and, moreover, as they serve to diminish the general bulk of the head, in consequence of their lapping over each other, under the pressure of uterine action.

The lambdoidal suture, is formed by the junction of the occipital with the parietal bones, and extends in an angular shape, at the back part of the head, from near its vertex, in the direction of and towards the back part of the ears. The coronal suture is formed by the junction of the parietals with the frontal bone, and runs directly across the front and upper part of the head. The sagittal suture is formed by the junction of the two parietal bones, and extends, in a direct line backwards, from the frontal to the occipital bone. At the point where the two divisions of the frontal and the parietal bones meet, the ends are rounded off, so as to leave a quadrangular vacancy; this is

called the anterior fontanelle, to distinguish it from a second vacancy of the same kind, formed in the same manner, at the junction of the parietal and occipital bones, termed the posterior fontanelle, and which differs from the preceding one in being less, and of a triangular, instead of quadrangular shape.

In a pelvis properly constituted, whenever the fœtal head does not exceed the dimensions above stated, and is favourably applied to the superior aperture, the presentation is said to be right, and the parturition may be expected to terminate favourably. It happens, however, that the presentation is not always so favourable, and sometimes the fœtal head is disproportionate: the latter may be occasioned by too large size of the child, or it may be caused by disease, as in hydrocephalus, or by malformation, or monstrosity.

2. *The Placenta and Umbilical Cord.*

The placenta, is a flattish, round, spongy mass, about seven or eight inches in breadth, and one or two in thickness, consisting, principally, of a congeries of vessels, by which it is connected, through the medium of the membranes, to the uterus: it is most commonly attached near the fundus, but this is not always the case, as it is occasionally situated over the os uteri. To the

fœtus it is also connected by means of the umbilical cord.

The umbilical cord consists of a plexus of vessels, connecting together the fœtus and placenta, and is generally from one to two feet in length.

3. *The Membranes.*

These may, as far as relates to parturition, be regarded as a simple, slender bag, lining the cavity of the uterus, and enclosing the fœtus and liquor amnii, as well as the placenta and umbilical cord; previously to their rupture, they are the first contents which present themselves through the os uteri.

4. *The Liquor Amnii, or Waters,*

Is a serous fluid, contained in the membranous bag above described, often in considerable quantity, in which the fœtus is, as it were, immersed, and swims; during parturition it assists in facilitating dilatation, and lubricating the vagina.

CHAPTER II.

OF THE PHYSIOLOGY OF PARTURITION.

SECTION I.

General Observations.

PARTURITION may be defined as consisting of "That series of actions, by which the contents of the gravid uterus are separated, and expelled from it."

It should naturally take place, when the impregnated embryo is sufficiently matured, to be fully capable of existing independent of the maternal system.

This state of maturity of the embryo, is looked for at the period of nine months, from the time of its first reception into its nidus the uterus.

The fœtus is, however, occasionally, in consequence of the operation of accidental circumstances, ushered prematurely into full existence, and found capable of sustaining the powers of life; this may happen as early as the sixth or seventh month; the above period of nine months is, notwithstanding, to be considered as a general law, influencing the time required for human production.

The uterine contents may also be detached at any period previous to the sixth month, producing what is called abortion; the embryo being then too imperfectly evolved, or too weak to support external life.

Before entering upon the causes of parturition, it seems desirable to consider what has been termed its mechanism, or that series of apparent actions, or phænomena, which accompany the process. These may be divided under two heads,

1. *The preparatory or precursory Actions.*
2. *The expulsive or parturient Actions.*

SECTION II.

OF THE PREPARATORY, OR PRECURSORY ACTIONS.

Was it possible to attend to the actions and changes which take place in the uterine system, during the period of uterogestation, there is not a doubt, but that a variety of such changes, as tend to the ultimate *separation* of its contents, would present themselves, previous to that event, and preparatory to it.

It may not be improper to advert to the analogies, presented by vegetable generation, in confirmation of the above position.

The generative parts of plants differ from those of the animal kingdom, in wanting both the uterus, and the excretory duct, the vagina; it is true they possess, in the inflorescent state, a vaginal canal, for the purpose of effecting their impregnation, which is connected immediately with the ovarium, to which it conveys the fecundating principle of the male organs, without the intervention of an uterus; it is, however, simply an organ of impregnation, and perishes with the flower after that purpose is effected. An uterus is entirely wanting; the functions which are, in the animal world, proper to that organ, being discharged by the

ovarium; in it the seed is matured, and finally liberated, by a series of processes which take place in its substance or parietes. The final detachment of the seed from its ovarian nidus, is to be considered as the parturition of the vegetable; and as the accompanying changes are confined to one organ, which is always situated externally, it is fair to infer, that the phænomena which that organ presents, will be more evident, than where they are divided upon two or more internal and concealed organs.

The parturition of vegetables is effected in various ways; in many the separation from the parent takes place previous to liberation from the ovarian nidus, as in the apple, peach, and various other genera, after which the seed is detached therefrom by the putrefactive or other accidental processes; in others it is accomplished by an actual opening or dilatation of some part of the receptacle, as is instanced in the leguminous plants, when they are said to shed their seed.

In all instances, the process of separation is for a length of time indicated, by evident and progressive changes in the constitution, form, or appearance of the receptacle; so that the state of maturation, and the period of separation, can always be correctly judged of, or foreseen, as consequent to those changes.

In the human female, the gradual state of preparation is also long observable. We find that

the cervix of the uterus, through which its contents are at a future time to be excluded, has, during the earlier parts of pregnancy, sustained little alteration; and it is probable that it does not possess any necessary influence in the maturation of the fœtus, being solely the organ of its communication with the vagina, both at the time of conception, and future expulsion; from the middle of pregnancy, however, it begins to sustain a gradual series of changes, undergoing a state of expansion, until it is at length entirely obliterated, when the uterine contents come into immediate contact with the circle of the os tincæ, in which state they are ready for the commencement of the expulsive actions, which are now upon the point of being exerted.

During this progressive change of the cervix, and until the near approach of the expulsive action, the os uteri has remained closed up by the gelatinous secretion of its follicular glands; that substance is now separated, in consequence of the increased action excited in and about the part; the same increased action also appears to give rise to a considerable lubricating secretion, often tinged with blood, and usually called "shows," from the os uteri and adjacent parts of the vagina, which is, doubtless, intended to facilitate their subsequent dilatation.

For one, two, or more days, previous to the commencement of the expulsive actions, a sub-

sidence of the abdominal uterine tumour is evident; so that its fundus, which had previously lain as high as the scrobiculus cordis, now reaches only half way between it and the umbilicus; the female is, at the same time, sensible of a diminution of bulk, and feels herself considerably less incommoded by it. This subsidence is, certainly, not referable to diminution of substance, but arises from the uterus, which, during the previous period of uterogestation, has never closely embraced its contents, but has surrounded them in a loose and relaxed manner, contracting itself upon them, as if ready and eager to commence the parturient process; this state of contraction, which appears to consist of an increased *tonicity* of its fibres, is most probably dependent upon the high state of nervous principle at this time solicited, or determined, to the uterine system, upon the same principle upon which, although in a reverse way, the tone of the muscles of the face, which is most perfect during a state of health, when fully susceptible of the nervous influence, is diminished when that susceptibility is impaired by paralysis.

One probable effect of the above contraction of the uterine fibres will be, to complete the expansion of the neck of the uterus, by the increased pressure made in consequence upon that part, and which is occasionally so considerable as to rupture the membranes.

On making an examination per vaginam at this time, the head of the child, in a correct presentation, will be found applied to the circle of the os uteri, or, in case of obliquity of it, lying upon some of the lateral parts of the cervix, producing a protrusion of them upon the vagina, and forming what has been called the uterine tumour.

A state of pain commonly precedes for a greater or lesser time, the expulsive action, which has been called spurious pain, from its being found to produce no dilating effect upon the os uteri; although generally irregular in its attack, it is occasionally so violent and severe, even for a month or two, previous to the true action taking place, as to resemble the pain of real parturition, and to induce the patient to believe that the case is in great progress.

Spurious pains occupy the belly, back, hips, or any other muscular parts adjoining the organs of parturition, and at times the uterus itself; they also produce sensations of fæcal and urinary evacuation, and are connected with a variety of sympathetic actions throughout the system.

They have usually been considered as unconnected with real parturition; it is hoped, however, in a future part of this Essay, to advance reasons for supposing them the effects of the true parturient energy.

SECTION III.

OF THE EXPULSIVE, OR PARTURIENT ACTION.

The fœtus having arrived at perfection, and the uterine system being prepared for its expulsion, a series of actions, to produce that end, commence.

These actions are distributed into a number of efforts or paroxysms, coming on by periods, with intervals between those periods; they are, under the present state of human society, most commonly accompanied by pain, and hence have been, although incorrectly, termed labour pains.

The process of parturition is ushered in by the accession of the above-denominated labour pains; but which we shall in future call the parturient paroxysms, as expressing more correctly their action and effects.

The effect of each individual parturient paroxysm is, in proportion to its energy, to produce a degree of dilatation of the passage leading from the uterus, with a propulsion forwards of the uterine contents; and the aggregate of paroxysms produces their complete dilatation, attended by the expulsion of the uterine contents.

The paroxysms are rendered evident to the patient principally by the sensations which accompany them; the first paroxysm is rarely productive of sufficient effect to produce an expression indicative of its presence; it is, nevertheless, a true epitome of every succeeding one, the essence of which it contains, and of which its description may be considered explanatory.

During its continuance, the patient is sensible of somewhat pressing within her, the nature of which she can scarcely explain, but which she refers to a bearing down sensation within the pelvis, in some degree resembling the motion accompanying the commencement of fæcal evacuation; this continues for a short time, and then is gone, and its only apparent effect will be a slip of mucous discharge or moisture from the vagina.

The above may be considered as a general description of the parturient paroxysm, in its simplest form, so far as is referable to the feelings of the patient.

After a certain interval, the paroxysm is repeated, and every subsequent one is similar in principle, although it may vary in degree; the sense of bearing down will progressively increase, so as to amount, at length, to violent and forcing exertion; as the case makes progress, the period of continuance will be enlarged, and that of interval lessened, each succeeding paroxysm be-

coming more highly charged than the one preceding it, until it arrives at its acmé, when the violent actions produce the expulsion of the fœtal head, which is soon followed by the remaining parts of the body.

We now turn to such effects of the parturient paroxysm, as are detected by the attention of the accoucheur.

On applying the hand to the abdomen of the patient, previous to the approach of the paroxysm, the uterus will be found in a flaccid state; the parts of the child and other abdominal contents, may, indeed, be felt presenting harder masses through its parietes, but its general feel will offer an easy compressibility; the paroxysm now commences; it immediately becomes evident, even before the patient has a perception of it, that a change is taking place; the compressibility gradually diminishes, until it is entirely lost, and the abdominal tumour is rendered so hard and tense, that a difficulty is found in producing the slightest indentation, so that it may be said, to speak emphatically, to become hard and solid as a board.

As the paroxysm recedes, the contraction and incompressibility gradually go off, and the softness and flaccidity return.

It may not be improper here to deviate, in some degree, from the subject before us, to no-

tice the very delicate and excellent mode of trying a pain, which the above state of uterine contraction, as evinced through the abdominal parietes, affords; the information it gives is most important, and uniformly correct; no genuine parturient action is without it, and, when perfect, no false or unprofitable action is ever found coexistent with it, its presence evidencing the existence, and its absence the want, of the true energetic uterine principle; by which it unfortunately happens, that the most distressing states of parturition are often, for a length of time, totally unaccompanied. It is true that it will not indicate the state of presentation, or the degree of progress, but when those points are ascertained to be favourable, the necessity of frequent examination, per vaginam, which is always distressing to female delicacy, will be obviated by its use; the information it is capable of affording, might even be acquired through the dress of the patient, without trouble, or much appearance of interference; its most decided importance, must, however, rest upon the ready opportunity it gives of becoming satisfied that the state of the parturient energy is correct; a point which will be found to require a regular attention, and to involve the most interesting consequences.

But to revert. It is by the examination, per vaginam, that the effect which the parturient

paroxysm produces upon the progress of the case is to be ascertained.

If the examination is made previous to the accession of a paroxysm, the uterine orifice is found to resemble a circle of various diameter, in some cases not larger than a dimple, beyond which the presenting parts are opposed to it, but in so loose and relaxed a manner, that the action of the finger may be made to elevate them at pleasure; at the same time the os uteri itself presents a soft and relaxed feel, affording no remarkable sense of tension, and, if sufficiently dilated to admit the point of the finger, the membranes are felt through it in a similar loose state.

As the paroxysm comes on, the orifice begins to acquire a tense and constricted feel, its internal rim becomes more perfectly circular, fixed, and incapable of being moved laterally by the action of the finger; the presenting parts are pressed downwards, in the direction of the vagina, so as to approach nearer to the external orifice, with a degree of force which the finger is incapable of resisting, and by which the os uteri is often sensibly enlarged.

After the paroxysm has expended itself, the state of pressure and tension cease, and the parts return to their former state; with this exception, that a greater or lesser degree of dilatation will have been produced.

The above description is chiefly applicable to the primary paroxysms; it will be found, in principle, to hold good throughout the succeeding ones, although its effects may vary according to the state of progress.

When the state of dilatation has proceeded so far that the os uteri is opened to the size of a shilling, or more, a portion of the adjoining membranes begin to be protruded through it; the effect of the paroxysm now impels upon them a quantity of the liquor amnii, by which they become distended into a roundish tense bag, resembling a portion of a blown bladder, filling up the orifice, and, at the same time, pressing forcibly upon it, on the principle of the wedge, so as to promote the dilatation; this which is called the gathering of the waters, is of much utility in the process, as instead of the hard head of the child, it offers a soft, regular, and easy medium, by which the dilatation may be effected. In proportion as it advances, the size of the membranous bag increases, until at length the os uteri is fully opened, and every part of the barrier between the uterus and vagina obliterated.

The membranous bag now bursts; the waters are discharged, and the head of the child is fully received into the vagina; a repetition of paroxysms takes place; the head is propelled upon the perineum, which becomes excessively distended;

the os externum is opened, and the head, speedily followed by the remaining parts of the body, is excluded. The birth of the new creature is thus finally accomplished.

In a short time, new, but slighter, paroxysms succeed, which detach and expel the placenta and its appendages.

SECTION IV.

OF THE NATURE AND CAUSES OF THE PARTURIENT ACTION.

Having advanced that the expulsion of the uterine contents is produced by the parturient paroxysm, the effects or phænomena of which have been above described, it remains to consider the nature and causes of these paroxysms.

Many ridiculous reasons have been assigned as explanatory of the causes of parturition, and the manner in which labour pains are excited, which it is not necessary even to enumerate, as they have long ceased to retain any influence over the obstetric science.

At the present period, it is universally admitted that parturition is chiefly effected by a contraction of the muscular fibres of the uterus; in addition to this cause, it has been supposed that the action of the abdominal muscles and diaphragm are auxiliaries. That the parturient action depends upon this state of uterine contraction, is undeniable, and probably the general admission in its favour, might be assumed as a sufficient confirmation of the fact; it is, however, clearly evidenced by the following circumstances:—

Anatomy demonstrates the existence of muscular structure in the gravid uterus; it is, therefore, fair to infer that it is intended to undergo muscular action.

The application of the hand to the enlarged uterus, through the abdominal parietes, during the parturient paroxysm, proves that a powerful contraction does take place, which can only be muscular.

After the accomplishment of parturition, the uterus is left firmly and permanently contracted.

The existence of muscular contraction is clearly ascertained in the operation of turning, in which the hand of the operator being introduced into the cavity of the uterus, is made fully sensible of its power.

The analogies which are presented by other organs of expulsion, may also be admitted as confirmations; the evacuation of fæces and urine are particularly and evidently produced by muscular contractions.

It may be concluded, therefore, that whenever a parturient paroxysm takes place, the muscular fibres throughout the uterus are thrown into a state of contraction, embracing firmly the uterine contents, impelling them downwards upon its orifice, and producing a progressive advancement towards their expulsion.

With respect to the assistance afforded by the

abdominal muscles and diaphragm, it is admitted that they are capable of producing considerable pressure upon the uterine orifice, with a degree of expelling action, in the same manner as they assist the fæcal and urinary evacuations; they are, however, unnecessary, and not intended by nature to assist in the process, and are often productive of ill effects, and ought always to be avoided; they will, on these grounds, receive a future consideration.

The muscular action of the uterus is, without doubt, dependent upon the same principles as actuate the general muscular system, and produce its various motive phænomena; it may also be added, originates from the same determination of nervous power, produced by the inexplicable action of the cerebral organs, and is governed by similar laws.

The peculiar modification of nervous power which influences the uterine muscles, is, by way of distinction, termed the parturient energy.

Many speculations have existed as to the cause of this contraction of the uterine muscles, taking place at the end of nine months from the commencement of pregnancy, some of which are absurd enough, while none have been considered satisfactory, so that the subject has been dismissed by an eminent modern professor, with the consoling reflection, that the investigation could

serve no good purpose*. As with the late learned Dr. Denman†, the author is induced to think differently, and conceives that the above cause may embrace the reason why the uterus ever contracts at all; and, not only involve the exciting cause of parturition, but lead to important practical results, he begs leave to enter into its consideration.

Of the opinions which have been entertained respecting this point, those only which suppose it connected with changes taking place in the state of the uterus itself, seem worthy of attention.

The state of contraction has been supposed to depend upon distention of the uterus, arising at the latter period of pregnancy, from the increased size of its contents, the latter becoming too large for the cavity to admit of any further growth; this opinion is, however, clearly disproved, from its having been demonstrated, that at no period of uterogestation, is the uterus completely filled by its contents, except when it is under an actual state of contraction.

Another opinion is, that it is excited by some peculiar stimulus or irritation applied to the os uteri. This appears so well founded in nature, and confirmed by fact, that it promises to afford the desired explanation, and therefore merits to be fully considered.

* Burn's *Principles of Midwifery*, p. 295. 4th. edition.

† Denman, Chap. v. Sect. xi.

The determination of nervous power which has been stated to influence the contractions of the uterine muscles, appears to exist in every state of the uterus, whether it is, or is not, under impregnation or in the gravid state; in the unimpregnated state it is evinced in the menstrual discharge, particularly in cases of dismenorrhœa, where skinny matters and coagula are thrown off by paroxysms, attended with pain; it is also evinced under states of disease; in the earlier stages of pregnancy, the contractions of the uterine fibres are the efficient cause of miscarriage; in the more advanced stages of premature labour; and we have seen that, at the full period, it is productive of fœtal expulsion.

It appears, therefore, that during the whole time of uterogestation, the constitution of the uterus is such as will dispose it to expel its contents, whenever a sufficient exciting cause is applied, which disposition is permanently attached to it, and is not a new principle acquired at any period of pregnancy. What is then the nature of that exciting cause, which in parturition determines the uterine muscles to these efforts at so exact a period?

Did it consist in mere determination of nervous power to the uterine organs, it is certain that the effect might have been long anticipated; as the uterine system evinces in a peculiar manner,

throughout pregnancy, the strongest susceptibility of nervous influence, and of effect from that influence.

Is it supposed that an accumulation of nervous energy takes place in the uterine system at that peculiar period, so as to excite the muscular actions? The supposition is negatived by the possibility, and frequent instances of the uterine contraction occurring prematurely, before such accumulation can be supposed to have taken place.

The exciting cause, although acting upon the susceptibility of the uterus to receive its impressions, does not appear innate in the uterus itself, but probably consists of some principle, externally or mechanically applied to it.

As tending to elucidate the point, it is desirable to consider the phænomena presented by the analogous actions of fæcal and urinary evacuation.

The rectum is an organ intended for the reception and expulsion of the fæces; it consists of a tubular cavity, surrounded on all sides by muscular fibres, connected at its posterior end with the intestinal canal, from whence it receives the fæcal matters, and at its anterior end with a strong muscular ring called its sphincter. When the first portions of fæces enter it, they occupy the further extremity; but, as each successive portion is received, the former one is protruded forward by the impulse from behind, assisted by the contractile

power of the part, until it eventually arrives at the anterior extremity, or sphincter; in proportion as the accumulation takes place at this point, a stimulating effect is produced upon it, the irritation of which is at length followed by the action of the muscular coat of the rectum, which presses forcibly upon the fæces, and expels them.

It may be noticed in the above-described process, that, during the earlier periods of accumulation, no disposition to expulsion is perceived; and that in the latter period, when the sensation of want of expulsion comes on, it is always referred to the sphincter; hence it is inferred, that the action of the muscles of the rectum are subsequent and consequent to an impression first made upon the sphincter; this position is further proved by the effects of introducing a bougie, candle, or circumvoluted piece of paper into the anus; which, by stimulating the sphincter, induces expulsive action, as is not unfrequently practised by nurses to relieve the constipation of children.

The urinary bladder also contains muscular structure, and possesses its peculiar sphincter; in the extrusion of its contents, we have, however, more decided evidence that the contraction of its muscular coat is influenced by an impression made upon the sphincter; the disposition to make water is most evidently first intimated by a sensation at the neck of the bladder, communicated from

thence along the urethra, but not felt in the bladder itself; in cases where the sensibility of the neck of the bladder, or the stimulating power of the urine is increased, the effort will be excited, long before any distention of the bladder takes place, and is often continued for a length of time after its contents have been generally evacuated, if any portion of the irritating fluid is left in contact with the sphincter. In calculus, the efforts of micturition are known to be particularly frequent, when the stone is opposed to the neck of the bladder, and proportionally less when it lies near the fundus.

Have the above sphincters any peculiar, or larger, supply of nerves than the bodies or organs they are respectively attached to, in a similar manner to what has been noticed with respect to the os tincæ?

To return to our uterine subject. It has been observed that a regular series of change takes place in the cervix of the uterus during the latter months, which only becomes completed at the end of gestation, and immediately before the commencement of parturition. This change has been stated to consist of a gradual opening or expansion of the cervix; during the earlier parts of pregnancy, the uterine contents are at a distance from its orifice; as the above expansion proceeds, they gradually approximate; when it is completed they

are contiguous, and the process of expulsion soon succeeds. A strong analogy may be here observed with the case of fæcal evacuation above-noticed, in which a gradual progress takes place of the fæcal contents towards the sphincter, and in which also the ready disposition to contract, is proportionate to that progress; and is most perfect when they are contiguous: but the analogy does not rest here, as it may be shewn that the nervous structure connected with their respective organs, are not only similar, but derived from the same origin, both being supplied with nerves from the hypogastric trunk, of which one division is expended upon the rectum and its sphincter, the other upon the uterus and vagina. Is it not reasonable to suppose this similarity of structure to be attended with similarity of action, particularly when we do know, that their functions are correspondent, viz., to exclude the contents of their respective organs?

We have hence strong analogy to prove, that the contractions of the uterus are produced, in consequence of a certain impression excited by its contents upon its orifice. We shall inquire how far other circumstances, connected with the structure and actions of the uterus, confirm the position, and farther how far the process may, upon such principle, be excited by art.

It has been admitted that different parts of the

uterus are possessed of different states of sensibility, and that its orifice is most highly charged; upon whatever ground the admission has been founded, it is confirmed and illustrated by anatomical observation. We have seen it supplied with nerves from the renal plexus, the spermatics and the hypogastric nerves; the two former, which are chiefly derived from the sympathetic plexus, supply the upper parts of the uterus, ovaria, &c., and may be considered as the chief media of their communications with the general system, or of their sympathetic actions; the latter, although not devoid of connexion with the sympathetic nerves, is principally formed from the spinal nerves, which are more peculiarly nerves of motion; it may be considered the chief nerve of the uterus and vagina, upon every part of which the largest division of it is expanded, the lesser one as before noticed supplying the rectum; it, however, passes more directly and largely to the os tincæ and adjoining parts.

It may hence be inferred, that the orifice of the uterus possesses a high state of nervous power, and consequently a peculiar function. It has also been observed that this part becomes little connected with uterogestation until that office is complete, being previously removed to a determinate distance from the distending process. Is it not, therefore, reasonable to consider, that its pe-

culiar function, so far as it is connected with a high state of sensibility, is to give warning of the task of uterogestation being perfected; and to be the medium of calling into action, the powers which are appointed to produce the expulsion of the now mature fœtus?

Moreover, we find, where from existing circumstances, the degree of pressure upon, or irritation of, the os uteri, is of a minor kind, or not regularly applied, that the parturient action is less forcibly or speedily excited. This may be particularly noticed in cases of wrong presentation or malformation of the child, or pelvis, or where the quantity of liquor amnii is excessive; in all of which the application of the more firm parts of the child to the uterine orifice is prevented; and also where there is much obliquity of the os uteri, the presenting part not pressing directly upon the orifice.

The cessation from future paroxysm, after rupture of the uterus, is a farther confirmation, which is clearly occasioned by the retrocession of the presenting part from the os uteri.

The contractions of the os uteri may be artificially excited by an irritation applied to the orifice, affording a proof that the cause presumed is adequate to produce the effect attributed to it; in this case it has also been observed, that the contracting disposition does not necessarily continue

after the exciting irritation has been removed. The above doctrine was well known to the ancients, and was practically used by them, for the purpose of facilitating parturition; such interference is, however, very properly, decried in the present day, although there may occur cases in which its cautious use would be of essential service*.

* The subjoined interesting case was communicated by the author's father, Dr. Power, of Lichfield.

" That the parturient contraction does not happen in consequence of distention of the uterus, after nine months' pregnancy, but from some stimulus applied to the os uteri, may be inferred from the following case:

" A woman forty years of age, the mother of many children, considered herself at the full period of uterogestation, and experienced at that period a slight pain or two, after which she became free from any further effort for nearly three months; her situation exciting alarm, several medical gentlemen saw her, and declared, after examination per vaginam, that she was not with child, as they could feel no weight upon the os uteri, or variation of it, from what is found in the unimpregnated state. I saw her, and in a common examination, as she lay upon the bed, found matters apparently as had been represented; observing, however, the abdomen very large and pendulous, hanging down when in an erect posture almost to the knees. A friend of hers, a physician of great eminence, who was present, was requested to stand above her on a chair, and to elevate, as she stood, the pendulous belly with the assistance of a napkin; an examination was, under these circumstances, made per vaginam, and I could now feel distinctly the head of the child. A bandage was contrived,

The occurrence of pains in cases of extra-uterine fœtation, at or about the usual termination of utero-gestation, may be considered as militating against the above opinion; it must be observed, however, that the facts connected with that state which have hitherto been observed, are frequently too vague and contradictory, to be admitted as decisive grounds of argument. That such state is most commonly attended by pain is certain, but these pains cannot arise from real expulsive action of the uterus, as that organ contains in fact nothing to expel. It must also be observed, that such cases do occasionally proceed through their whole series of phænomena, without any pains being excited, or being productive of material inconvenience or distress; while at other times, the pains will commence in the early stage, and continue to be more or less excited throughout the whole period of pregnancy.

It is nevertheless certain, that a state of pain, which has been supposed similar to labour pains, does occur commonly from the eighth to the tenth month; it is probable, however, that it does not partake of the nature of the parturient paroxysm, but

with straps to her stays, by which the child was removed from its situation over the os pubis; in four or five days labour pains came on, and she was delivered of an amazing large but still-born child."

consists of spasmodic actions of the surrounding parts, unconnected with the uterus. It is also possible, that a translation may be made from those parts to that organ, upon the principle of metastasis, of which we shall have much to say hereafter; or the child may gravitate during the latter months, upon the cervical part of the uterus, which may have undergone some similar preparatory change to what it experiences in uterogestation, and thus produce certain actions of the uterus by irritation of the cervix.

It is an established law of the system, that the connexion of the child with its mother should cease at, or soon after, the ninth month from conception, whether it has undergone expulsion or not; the cause of this we cannot more easily explain, than the reason why the sexual systems become perfect at fixed periods, or an apple falls from the tree when it arrives at a state of maturity; whenever this takes place, it is probable, that the child becomes an extraneous mass, and consequently excites inordinate actions of the parts around it to produce its removal; whereas it had previously constituted a vital part of the system, and as such received both support and forbearance from it.

It is not impossible, that in those recorded cases, where the existence of expulsive efforts of the uterus was most apparent, the fœtus might at

the time have been contained within that organ, from whence it had been subsequently expelled into the abdominal cavity, in consequence of its rupture. This opinion is not without respectable sanction.

CHAPTER III.

OF THE PATHOLOGY OF PARTURITION.

SECTION I.

General Observations.

WAS the structure connected with parturition, perfectly and naturally correct, and did its actions always proceed, in conformity with the principles which nature has established, there can be no doubt but that the process would be an easy one, and require little, if any, interference from art; there being no natural reason why the human female should suffer more than other animals in the act of parturition.

A variety of deviations, however, in the above circumstances, takes place, which alter and modify its actions and their effects, so as to render it a process of difficulty, and to call for adventitious assistance.

These deviations may be divided as follows:

a. Deviations arising from the state of the parturient energy.

b. Deviations produced by mechanical obstruction to the expulsion of the uterine contents.

c. Deviations arising from accidental circumstances.

The above divisions, it is conceived, will comprise every state of difficulty which is found to occur in parturition; the pathological principles of which, it is the object of the present Chapter to unfold.

SECTION II.

OF THE DEVIATIONS ARISING FROM THE STATE OF THE PARTURIENT ENERGY.

Having advanced that the process of parturition is effected by the contractions of muscular structure attached to the uterine organs, and that such muscular action is produced by a modification of nervous power, which has been termed the parturient energy, and is dependent upon the same principles, and subjected to the same laws as actuate the general muscular system; it is fair to infer that it will, in a similar manner, be liable to disease or derangement, and may, consequently, become the subject of pathological research.

In considering the derangements of the parturient energy, which exert an influence over parturition, it is proposed to distribute them under the four following heads:—

A. The parturient energy, although it evinces perfect uterine action, produces spasmodic pain in the organs of parturition.

B. The parturient energy excites partial or irregular contractions of the uterine muscles.

C. The parturient energy, instead of actuating

the uterine muscles, excites actions of parts distinct from the uterus.

D. The parturient energy is suspended, so that it ceases to actuate any part of the uterine or general system.

A. The parturient Energy, although it evinces perfect uterine Action, produces spasmodic Pain in the Organs of Parturition.

It has been assumed (if it is an assumption) that the muscular contractions of the uterus are analogous with those of the general system, conducted upon the same principles, and regulated by the same laws; it will, therefore, be allowable to apply the facts which the one presents, in illustration of the other.

Every muscle of the body has its peculiar function, and is adapted in its power of action for the proper discharge of that function. In all instances is this power exerted in a natural degree, without the excitement of painful sensation; thus, the larger muscles of the body are thrown into the most powerful exertion, the rectum evacuates its fæces, and the œsophagus swallows its morsel, without distress, and, in many instances, the muscular contractions are performed without perception.

When, however, an extraordinary, or long-

continued opposition, is made to the action of a muscle, or its constitution* becomes morbidly affected, spasmodic affections of its fibres may be produced, attended by painful sensation, which is a mere symptom or effect of the spasm. The pain attending the expulsion of accumulated and indurated fæces, is an effect of unusual resistance to the contractions of the rectum; while the spasmodic actions of tetanus, are instances of morbid constitution of the affected muscles.

It is conceived that the above principles are applicable to the uterine contractions, and that under a natural state they will not be accompanied by spasm and consequent pain; this state of happy action is most commonly instanced in the lower classes of animals; it is, however, occasionally exemplified in the human subject, women having been known to have undergone their parturient actions while asleep, and, consequently, without pain; it may be inferred, therefore, that a state of spasmodic action, existing in the uterine organs, is equally unnatural as in any other muscle.

It is of importance to ascertain in what manner this unnatural principle influences parturition.

* The term constitution we here consider to possess great latitude, comprising, not merely the structure of the muscle, but its vital principle, as connected with its vis insita, and communication with nervous influence.

The uterine system may be viewed as consisting of two distinct parts,—the organs of expulsion, and the organs of resistance; the former comprising the muscular structure of its body and fundus; the latter, the uterine orifice and vaginal passage.

In consonance with the foregoing considerations relative to the general muscular action, it is inferred, that a spasmodic state of the organs of expulsion may originate from the following causes:—first, from over-action, to which it is determined by the necessity of overcoming a high degree of resistance; secondly, from a morbid state of the constitution of those organs.

A convenient opportunity presents itself in this place, of considering the resisting powers, which are found to oppose the expulsive actions of parturition.

Human parturition has been supposed to experience more resistance, and, consequently, to require more uterine exertion, than that of any other animal, from peculiarities connected with the structure employed in effecting it*. It has been conceived, that the form and disposition of

* "Human parturition, from the mechanism of parts, must be difficult, and that of animals, from the same reason, must be easy." *London Midwifery*, p. 124. Yet the same work contains a case of a woman delivered in her sleep! No animal could be delivered with more apparent ease or facility.

the human pelvis created a necessary difficulty, and calculations have been made of the different axes it offers, and of the line of curvature through which the uterine contents must pass, as explanatory of that difficulty. The argument appears plausible, and the difficulties actually experienced would seem to confirm it.

It is by no means intended to deny, that such structure may produce a degree of unfavourable influence, as more resistance must be offered to a body moving through a curved tube, than a straight one; yet it is conceived that too much consequence has been attached to it, in supposing it a powerful source of excessive action, and laborious parturition.

Was the principle correct, as the same structure is common, without exception, to all, it must be admitted, that it would uniformly produce retardation in all; this, however, is not the fact; women, notwithstanding this resisting curvature of passage, are frequently delivered as easily as other animals. It is also well known with what facility a moving body is inclined into a new direction, when impressed by a power acting obliquely upon it.

It would appear that this difference in the structure of the pelvis of the human female, was not intended so much to influence her parturition, as to guard against the effects which her upright

posture would produce, by allowing of the gravitation of the uterine contents upon their excretory duct, in a line directly downwards, which would have risked their premature expulsion.

It is admitted, however, that when the resistance of a disproportionate pelvis is opposed to the expulsive effort, inordinate actions of the uterus must take place to overcome that resistance; under a slight degree of opposition, this will not be productive of material distress, or at least of any considerable protraction ; in a greater degree, the distress occasioned will be proportionately increased, but it is most probable that the case will then be referable to another head of deviation.

There can be no doubt, that various shades of resistance will be opposed to the actions of the uterus by the softer parts, the effects of constitutional structure, as well as of disease.

The states of resistance, arising from this source, are too great stricture, rigidity or want of elastic principle of the os uteri, vagina, or perineum.

In each of them, the actuating principle may be considered the same, and the nature of its effects are similar, in affording mechanical obstruction to the expulsive efforts; and, consequently, producing more exacerbated and long-continued exertions to effect the dilatation, which will induce spasmodic affections and painful sensations of the uterine muscles.

Of the above sources of resistance, rigidity of the os uteri has been considered as the most powerful exciter of protracted parturition, and has received, from professors, particular attention in respect to its appearances, causes, and effects. The other varieties, although their influence has not been neglected, have only been regarded as minor sources; since it has been noticed, that when the os uteri, in its rigid state, has once become well dilated, although that dilatation may have required a great length of time, and been attended with most acute sufferings, the subsequent expansion of the vagina and os externum has been produced with comparative facility, notwithstanding it may have presented, previously, the most unfavourable appearances of stricture.

Yet, although all writers have concurred in admitting the effect of a rigid state of the softer parts as a source of protraction, the conclusions they have drawn have been in the minds of the most intelligent extremely unsatisfactory, of which it is easy to advance an instance. Mr. Burns, in his excellent treatise on the principles of midwifery, after detailing the unfavourable states and effects of a rigid os uteri, adds, " But although these observations may assist the prognosis, yet we never can form an opinion perfectly correct; for it is wonderful how soon a state of the os uteri, apparently unfavourable, may be exchanged

for one very much the reverse, and the labour accomplished with unexpected celerity. Our prognosis, therefore, should be very guarded. When the pains produce little apparent effect on the os uteri, when they are slight and few, and when the orifice of the uterus is hard and rigid, or thick and puckered during a pain, there is much ground to expect the labour may be lingering; on the other hand, when the pains are brisk, the os uteri thin and soft, we may expect a more speedy delivery: but as, in the first case, the unfavourable state of the os uteri may be unexpectedly removed; so, in the second, the pains may become suspended or irregular, and disappoint our hopes *."

After such admission, that the most unfavourable states of rigidity may be *wonderfully* overcome without difficulty; and on the contrary, that under the most promising state of the os uteri, our hopes of a favourable termination may be unexpectedly disappointed, we might feel warranted in conceiving, that in such cases of presumed rigidity, some hitherto unexplained principle may have influenced the progress; and, consequently, that the effects of the former, in producing resistance to the propelling powers, may have been overrated, since it is not probable that such state, being dependent upon an actual

* Burn's *Principles of Midwifery*. Page 290.

existence of resisting structure, could yield, as it were, by a miracle, without a proportionate power being exerted upon it. It might as well be expected to see a camel walk through the eye of a needle, or a cannon-ball pass with ease into a gun of proportionately less calibre.

An attempt will hereafter be made to prove, that such new principle does exist, and that its influence produces nearly all the distressing effects which have hitherto been attributed, in cases of what have been termed natural and tedious labour, to the resistances made to the propelling powers.

It is, however, fully admitted, that states of rigidity, and other resistances of the soft parts, do exert a retarding influence over parturition, and produce increased uterine actions, which may eventually give rise to spasmodic contractions of the muscular fibres; it is believed, however, that they prove only minor sources of difficulty, and do not merit the full attention which has hitherto been bestowed upon them.

It is now proposed to notice the production of spasmodic state, from morbid or deranged constitution of the uterus.

It is a well established fact, and must have been a subject of frequent observation, that in the general muscular system, unnatural and spasmodic contractions will be excited by very slight mo-

tions of the parts; and that they do even spontaneously take place, without any motion being made, or other evident cause applied. The muscle is then to be considered as morbidly affected; this morbid state may depend upon some injury done to the muscle, or its over action, or upon an external irritation, which has previously been directly applied to it; but is not unfrequently produced by some cause affecting its supply of nervous influence. Thus pressure or irritation upon the trunk of nervous supply, or deranged determination of nervous energy, or sympathetic connexions with other morbid parts, or mental affections, fatigue, *&c.*, will produce it; as is evidenced in the spasmodic states attending paralysis, tetanus, hysteria, typhus, and different passions, and diseased states of the mind.

The same spasmodic contractions, arising from what we have termed a morbid state of its constitution, may and do take place in the uterus, originating from the same causes, and conducted upon similar principles.

The organs of resistance may be thrown into a spasmodic state of action, in consequence of the increased impetus necessary to effect their dilatation under a state of rigidity, want of elastic principle, or other obstructing cause, and thus become the seat of acute suffering; they may also acquire an increased morbid sensibility from

various causes, which will favour the tendency to take on painful action.

From whatever cause spasmodic contractions of the uterine muscles may originate, although those contractions must be deemed as unnatural, and constituting deviations from the true parturient actions, it does not appear probable that they are necessarily productive of any retardation of the process; on the contrary, as they consist of violent exertions of the expelling powers, it may be conceived that they will be attended by some proportionate expulsive effort. As, however, they may depend upon morbid, and be succeeded by more improper, states, so as to produce more important deviations, and are also attended by distressing or painful sensation, it would always be right to effect their removal where this can be readily accomplished; nevertheless, in slighter cases, their relief is not of great importance; the interference necessary may agitate the patient and produce ill effects, so that it would have been better to have allowed the spasmodic state to have gone on without interruption.

It is probable, however, and the opinion is derived from experience, that a spasmodic state of the uterine organs, although a very frequent occurrence, is seldom carried to such an extent as to have any material influence on parturition; more important states of deviation must of course

be looked for where the resisting powers are acting most forcibly; under certain modifications of nervous influence, or where local injury has been applied to the uterus itself.

B. The parturient energy excites partial or irregular actions of the uterine muscles.

A muscle consists of a number of bundles or fasciculi of fibres, connected together by cellular matter, each of which bundle and individual fibre possesses the characteristic properties of the whole muscle, and is capable of undergoing all the phenomena of muscular motion. A muscle may therefore be considered as a combination of many smaller muscles, the aggregate action of which is requisite to discharge its perfect function, notwithstanding each fibre is capable of performing its share of the contraction separately, and independent of the remaining fibres; thus, if the upper part of that series of muscular fasciculi, which we term the œsophagus, are only thrown into action during deglutition, the morsel is partially swallowed, and choking is produced.

The uterus, we have seen, is like the œsophagus, composed of a series of muscular fasciculi, running longitudinally, concentrically, and in a variety of directions; if, during parturition, these are determined into partial or irregular action, it

is evident that the proper and full functions must be imperfectly discharged, and that they may be rendered totally inadequate to produce dilatation or expulsion.

It is probable that this modification of the parturient energy but rarely occurs; experience, however, has proved that it does occasionally take place*. It will be readily distinguished by laying the hand upon the abdomen, when one part of the uterus will be felt forming a firm hard mass, while the other continues in a flaccid state.

This state of partial contraction must necessarily arise from some morbid or deficient determination of the parturient energy, or from peculiar modification of the uterine muscles themselves.

C. The parturient energy, instead of actuating the uterine muscles, excites actions of parts distinct from the uterus.

The nature of the nervous energy, or that principle generated from the brain, by means of which the vital and animal functions are discharged, has as yet been imperfectly investigated. Its effects are, however, evident, and through them we can form some estimate of its properties.

* We have an instance of partial and irregular uterine action in the hour-glass contraction, attending the placental expulsion.

The nervous energy, notwithstanding it is capable of producing various modifications of action, appears to be of a homogeneous nature; and it is probable that the diversity of its effects, are dependent upon the diversity of structure upon which it acts.

Amongst other properties, it possesses that of general diffusibility, and is capable of being determined, or diverted instantaneously, to any part of the system, producing correspondent actions in that part.

The quantity of its production from the brain, is, however, under a degree of limitation; so that if it is largely or superabundantly, in proportion to that production, determined to any given part, it must become comparatively deficient in the remaining parts of the system.

We have here very strong analogies with the properties of the electric fluid, to which it appears nearly allied.

It is from this law of the distribution of the nervous power, that many of its phænomena are to be explained, particularly such as are presented under morbid states of the system, in which the true equilibrium may be presumed to be destroyed.

Amongst other effects, it is a consequence of the above law, that a secondary action excited in the system, is capable of counteracting the pre-

existent one, so as to diminish, and even entirely supersede, its operation.

It is here conceived, that the nervous energy supplying the primary part, is superseded in that part, in consequence of its being determined, by virtue of a superior irritation, to the secondary one, which then becomes actuated.

Numerous instances of these states may be adduced; amongst others, it is particularly exemplified in the excitement of gouty inflammation from an injury of the foot, in which the actuating nervous energy is derived from a previously morbid state of the chylopoietic viscera, and expended upon the inflamed extremity. The rationale of the use of blisters is also explicable upon the same principle.

The principle has been termed metastasis, because a translation is made of the actuating nervous power, from the primary to the secondary part.

In the above state of metastasis, the translation is evidently produced by the direct stimulus of a counter irritation, applied at the secondary part; by which the irritation affecting the primary part, is in a greater or lesser degree superseded; hence it is to be considered as a state of direct metastasis.

There is, however, a remarkable consent found to exist between different parts of the system,

dependent upon the nervous energy, in consequence of which a correspondence is maintained between them, in a manner often unexpected and inexplicable, and which is known by the name of sympathy; this principle appears to govern the whole of the vital and mental powers, and to control their functions, sentiments, affections, and diseases.

This state of sympathy has been supposed to be produced through the intervention of the brain, or by a direct communication of the nerves only, neither of which afford a satisfactory solution; it is not improbable, that the true explanation is to be found in the connexion of nervous chords with the brain, as well as with the different ganglia of the sympathetic nerves, which would appear, in some respects, to perform the office of brain; in many instances, the existence of actual communication of nervous rami may be traced, as is remarkably exemplified in the communications made by the sympathetic nerves, and in more they may be presumed to exist.

Vague and hypothetical as are our present views of the nervous system, we know that these sympathetic connexions do exist, and that so decidedly, that one part can rarely be acted upon without another corresponding. Various well known proofs of this consent may be adduced; for instance, the action of sneezing, which consists

of convulsive efforts of the respiratory organs, when an irritation is applied to the membrane lining the nose; and the excitement of inflammation of the foot in the gout, no previous local injury having been sustained, when the chylopoietic viscera are deranged; and probably there are few persons who have not had painful demonstrations of it in attacks of tooth-ach, where the effects of the diseased action have been transferred from the tooth, to the surrounding, and sometimes to very distant, parts, the pain in the tooth itself then becoming quiescent.

This, therefore, constitutes a most important fact in the doctrine of sympathetic actions, that when an irritation is applied to a given and primary part, the consequent action is not only induced in a distant or secondary part, but the primary one ceases to be affected, although the irritating cause may still continue to be applied to it.

As distinguishing this state, it may be termed sympathetic metastasis, the translation being made to the suffering part, in consequence of the energetic power being determined to it by a sympathetic excitement, and not by the direct stimulus of an irritation immediately applied to it.

That the uterine system is capable of forming a link in the chain of sympathetic actions, is as readily demonstrated as asserted; in the first

place, anatomical inspection shews that it is intimately connected with the great sympathetic nerves; secondly, it is confirmed by the well known sympathies which are excited in the general system, by its actions at the times of menstruation, and throughout the whole period of pregnancy; in short, no part of the female system manifests more decided consent with other parts.

We also assert, that, during parturition, it is peculiarly susceptible of the metastatic state, of both the direct and sympathetic kind; and, had we nothing but the above analogies in support of this assertion, it is conceived that it might fairly be presumed. The opinion does not, however, rest on such imperfect ground, but may be fully demonstrated by actual fact and observation.

It has been seen, that uterine action consists of a contraction of the muscular fibres of the uterus, which is evidenced by the imposition of the hand upon the abdomen, that contraction being then plainly felt; and also by the pressure or bearing down of the uterine contents upon the uterine orifice.

Whatever may be the state of suffering, or other symptoms attendant upon the paroxysms accompanying parturition, the above effects are to be considered as constituting the most important features, and true characteristics of uterine action;

if they are wanting, the uterine action must be also wanting.

It will be proved that they are occasionally wanting.

Frequent opportunities will be afforded, of ascertaining, on the application of the hand to the abdomen of the patient, even under the most acute states of painful paroxysm, that the uterus will continue, during that paroxysm, in a flaccid state, and easily yielding to impressions made upon it by the finger; so that nothing can be ascertained by the touch different from what may be perceived during the natural state of the abdominal tumor, when entirely free from the state of paroxysm; at the same time, the os uteri will, upon examination, be found completely unacted upon, its circumference loose and flaccid, and the head of the child may be sensibly, if not easily, elevated by the pressure of the finger against it; in short, the uterine fibres are totally unconnected with the existing paroxysm, and evidently in a state of complete inaction.

As it is clear that the action of such paroxysm, the effects of which are most decided and distressing, and which, it cannot be doubted, is produced by the influence of the parturient energy, is not expended upon the uterine muscles, so as to give rise to any real parturient effort, it must follow that the parturient energy which has pro-

duced it, has, in consonance with the laws of metastatic action, been determined from the uterus, which it ought to have actuated, to a distant or different part, the latter having been thrown into action, while the former has become quiescent.

The above inefficient state is, therefore, to be considered as consisting of a translation of the parturient energy, from the uterine system, to a distant part.

This translation may be effected either by direct or by sympathetic excitement.

To elucidate this more perfectly, it may be as well to offer a common exemplification:—

During the process of parturition, the urinary bladder becomes distended; the nature of the pain is now found to vary; the muscular fibres of the bladder are thrown into spasmodic action, and painful but imperfect feelings of a want to make water, during the paroxysms, take place; the uterine muscles are, at this time, to be found perfectly quiescent, however acute the paroxysm may be, the irritation of distention applied to the bladder having, by direct metastasis, acquired that energy which had previously actuated the uterus.

Or it may happen, that the irritation of the bladder, instead of producing increased actions of its own proper muscles, may excite sympathetic actions of a distant or secondary part, itself also

remaining quiescent; these may be of the abdominal or other muscular parts, producing spasmodic affections of the same, or of the arterial system, giving rise to fever, syncope, *&c. &c.* This is an instance of sympathetic metastasis.

It is also not improbable, but that many links of the sympathetic action may be formed, before the ultimate and decided effect takes place.

In all instances, the parturient energy is equally diverted from the uterine muscles, and eventually determined by metastasis to the part ultimately affected, and thrown into inordinate action. As no practical advantage will be derived from further distinction, their future consideration will be conducted under the general term of metastatic action.

Under a full state of metastatic action, the progress of the case is arrested, nor can it make the least advancement during its continuance, did this last (were it possible), *ad infinitum.* The author has known repeated instances where the delivery has, in consequence, been retarded for two, three, or more days, without the least progress throughout this long period of delay, notwithstanding, from the rapid advancement in the early stage, an expectation had been formed of a speedy termination; in some of these instances, when at length the genuine uterine action was restored,

the child has been expelled in a few minutes, without interference on the part of the accoucheur. The same difficulties and similar terminations must have occurred to every experienced practitioner.

We proceed with this interesting subject of metastatic action, and in our progress shall endeavour to detail its effects, and contrast it with the uterine action, to which it is most essentially opposed.

The metastatic action may be determined to various parts of the bodily system; these may be classed under two heads.

1. The metastatic action may actuate the muscular system.

2. The metastatic action may produce increased actions of the arterial system.

1. *Of the metastatic Excitement of the muscular System.*

The effect of a metastatic determination of the parturient energy, from the uterine muscles to other muscular parts, is to throw those parts into inordinate or spasmodic action: this is generally so violent as to be productive of intense pain; if, however, the inordinate action or spasm is in a minor degree, the accompanying sensation

may rather consist of soreness than violent pain; the first is, however, the most general form of this state of action, the latter will only occasionally be observed.

As it is conceived that the most distressing states of pain attendant upon parturition are those which accompany the determination of the metastatic action to muscular parts, the present appears a favourable opportunity for considering the nature of the pains of parturition, or, as they are termed, "labour pains."

Pain is so universally the concomitant of parturition, that it has been considered its most essential characteristic, and the process has consequently derived its distinguishing appellation of "labour" from the distress and exertion accompanying it.

The opinions which have been entertained respecting the nature and excitement of labour pains may be condensed under the following heads:

1. That the parturient contractions of the uterus are of a spasmodic nature.

2. That the *pain* of parturition is the natural effect of those spasmodic contractions of the uterus.

3. That the degree of pain is proportionate to the resistance afforded to those spasmodic contractions.

4. That no pain in labour is unprofitable.

The instances of inconsistency which may be found in the writings of the most intelligent authors, respecting the nature of the pains of parturition, do not a little strengthen a belief that the above opinions are inadequate to explain their correspondent phænomena. In confirmation, the following quotations may be advanced. Mr. Burns in his valuable work says, "It is a curious fact, not sufficiently attended to, that in many cases a very moderate resistance, which we should think the uterus might easily overcome, does retard the expulsive process, and render the pains irregular or inefficient*." Surely the above "curious fact," if it could have been explained upon any known principles, ought to have been explained; that it has not been explained, may be considered as a decisive proof that some important principle of the parturient state remained undetected.

Again. "Sometimes, after the first stage is completed, and the os uteri is well dilated, the second does not commence for some hours, but the first kind of pains continue in different degrees of severity without producing any perceptible effect†."

We shall endeavour to analyse the last quotation, and show the inconsistencies it presents.

We conceive it may fairly be paraphrased as

* Burns. Page 336. † Burns. Page 338.

follows: "Sometimes, when the os uteri is fully dilated by the action of dilating pains, although those dilating pains may continue to act very forcibly, no perceptible progress towards expulsion takes place for many hours."

Inconsistent as may have been the old and obsolete opinions respecting the causes and nature of the parturient action, it is now universally admitted, that the uterine contents are expelled by the powers of the uterus, and that this is effected by the contractions of its muscles; nor will any one deny that this muscular contraction is the same principle acting throughout the whole of the process; that the same contraction serves to dilate the uterine orifice, afterwards to open the vagina and os externum, and finally to expel the child.

It appears extraordinary, therefore, that the pains of uterine action, which in this sense are to be considered synonymous with that action itself, as manifested in the true parturient paroxysm, should be described as consisting of two different kinds, the pain of dilatation and the pain of expulsion, as if dilatation and expulsion were effected by distinct actions.

If the process of parturition is correctly attended to throughout its different gradations, no doubt will arise but that the dilating and expulsive efforts are synonymous, and dependent upon the same state of uterine contraction; these con-

tractions, in the first place, bear down the uterine contents upon the os uteri, producing a proportionate dilatation; when the orifice is opened, the continuance of the same pressure upon the vaginal canal is attended by similar proportionate dilatation; and the expulsion is finally effected by the continuance of the same power acting upon the os externum; in fine, the same process and actions hold throughout, and instances even occur where one and the same pain has produced the perfect and whole dilatation and expulsion of the case.

It is true that different sensations may be produced in different parts during the process, arising from the different sensibilities of the points pressed upon, but it cannot be supposed that the actuating principle differs.

Yet it is in consequence of this difference of sensation, and the variety of expression of pain thence produced, that the above incongruous opinion has arisen, an explanation having been looked for in the ostensible phenomena which they afforded.

Nor can it be conceived that the pressure made upon a given part can produce any great diversity of sensation almost at the same instant, yet such has been supposed the case. "There is an intermediate period of a labour, in which there is, in the first instance, some degree of dilatation, and

afterwards an effort to expel, and then there will be the expression which denotes sharp pain, combined, or immediately succeeded by a grave tone of voice*."

All this appears very inconsistent, and it is hoped in due time to show that these varied expressions of pain are to be explained upon different and more correct principles. In the passage above quoted from Mr. Burns, that author has evidently been led to consider the dilating pains as distinct from the expulsive ones, (an error into which Dr. Denman has also fallen), and thus to explain the want of progress; in further contradiction we would inquire, whether it is possible that the uterine actions, of which the supposed dilating pains must necessarily have consisted, could have gone on for hours with the described severity in a case of natural labour, without producing the least perceptible effect; was the distinction correct, we might be induced to wonder at the blindness of nature, in continuing her dilating efforts for such a length of time after the dilatation was complete, and when they could be of no farther service.

The completest confirmation which, however, can be given of the incorrectness of the above opinions will be found in an actual observation of

* Denman. Chap. viii. Sect. 3.

facts. Let the hand be imposed upon the abdomen of the patient during any of the anomalous states of pain described in the above quotations, and the uterus will be found in a passive state, entirely without contraction, and consequently incapable of producing either dilatation or expulsion.

We have already advanced reasons for considering the actions of the uterine muscles as being not necessarily connected with spasmodic pain, but that when it does take place, it is to be considered as unnatural, and as a deviation, however frequent, from genuine parturition.

It has also been admitted, that whenever such spasmodic state does occur, it will be productive of more or less painful sensation. It is, however, most positively denied, that the pains of parturition are in general the effects of such spasmodic contraction; a confirmation of the assertion will be found in the before-named fact, which the imposition of the hand upon the abdomen under that state of pain affords, which evidences the want of any contraction, and proves that the most distressing states of pain can take place without it.

Whenever the uterus is under a state of action, the pain produced by it must be necessarily proportionate to the resistance opposed to it, as modified by the existing sensibilities of the parturient organs; when, however, the uterine action

is deficient, and this will be found most commonly the case where the pains are particularly distressing, and the progress inconsiderable, the above rule will not be applicable; and, consequently, the degree of pain can be considered as no evidence of parturient effort, or the efficacy of the paroxysm.

Admitting that certain states of distressing pain are unaccompanied by the least uterine action, the position that no pain in labour is unprofitable must fall to the ground, as the expulsive or dilating effect is entirely suspended, or lost, during this inert state.

We recapitulate, by asserting,

1. That the uterine action is not necessarily accompanied by a spasmodic state of the uterine muscles, and consequent pain.

2. That the most distressing pains of parturition may be totally unconnected with the action of the uterus.

3. That such pains are inefficacious and unprofitable*.

* The late Dr. Denman was fully aware that a state of pain and the uterine action did not depend upon the same principle. He says, vol. 1. p. 362, "The pains of labour, or child-birth, and the action of the uterus, are terms used synonymously, but are not the same thing;" he then states, that the action of the uterus does not seem attended by pain, but that the pain originates from resistance to the passage of the uterine contents, and "is pro-

The pains of parturition depend upon two different principles :—

1. The sensations excited in the uterine system itself by the direct action of the parturient energy.

2. The sensations excited in parts distinct from the uterine system, by the metastasis of the parturient energy from that system to different parts.

The painful sensations arising from uterine action, may be considered under two heads :—

a. Pains arising from spasmodic actions of the uterine muscles.

b. Pains originating from the pressure produced by the uterine contractions upon the os uteri, vagina, and other parts connected with the passage for the child.

The first are to be considered as referable to

portionate to the action, the sensation of the resisting part, and the resistance made;" and that if the passage could be supposed so perfectly disposed to dilate, that little or no resistance would be made to the excluding force, the woman would be delivered with little or no pain. It is conceived, however, that it has been sufficiently established, that states of pain do occur totally unconnected with either uterine action, or resistance to that action, as no such action can be proved to be exerted during the continuance of those pains.

It is denied, however, by Dr. Denman, that any pain is unprofitable,—"No person in labour ever had a pain which was in vain : every pain must have its use, as preparatory to, or absolutely promoting, the effect." Chap. viii. Sect. 3. We trust the contrary has been proved.

the powers of expulsion, the second to the powers of resistance.

It appears probable, from what has been before stated, that spasmodic action and its consequent pain are not necessary concomitants of uterine action; and that, whenever such effects take place, they originate from increased opposition, or a morbid state of the constitution of the uterine system: an opinion has also been expressed, that such effects, although of most frequent occurrence in an unimportant degree, are rarely met with to such extent, as to produce material impediment to parturition; and that although, when they do take place, they must necessarily increase the state of distress, they are not to be looked upon as necessarily retarding the process.

A certain state of sensation, amounting to a greater or less degree of pain, must be produced in the resisting parts, by the pressure made upon them to effect their dilatation; and this must necessarily be proportioned to their sensibility, the violence of pressure, and the degree of resistance they afford.

Various cases of easy delivery prove, however, that these do not always exert so much influence as to be productice of high states of pain; the os uteri, vagina, *&c.*, are intended and adapted by nature for distention, being of a yielding and elastic structure; so that they are found, in many

instances, to give way to the dilating powers with little appearance of resistance or distress, even where difficulty had been previously anticipated, from the sense entertained of great sensibility, stricture, or rigidity.

The dilatation of the os uteri and vaginal passage is, however, generally productive of more or less degrees of pain; this is evidenced by the artificial dilatation, which is necessary in certain cases of preternatural presentation, which is always productive of a high state of pain; it must be recollected, however, that this artificial process is not carried on in the smooth, gradual, and regular manner in which nature accomplishes it; on the contrary, it is effected by the bony and unequal surface of the hand of the operator, applied in irregular, often violent, and long continued efforts.

It is conceived, therefore, that the pain arising from mere distention of parts, is not of so violent a nature, as to account for the sufferings experienced under the more distressing states of parturition.

It is not improbable, however, but that the increased sensations of the os uteri and passage, may be productive of difficulty by giving rise to metastatic determination of the parturient energy, in consequence of sympathetic actions propagated from thence to other parts.

The nature of the second variety of pain, or the sensations accompanying the translation of the parturient energy to muscular parts distinct from the uterus, will now be unfolded, together with the further consideration of that metastatic determination.

The spasmodic actions, excited from this source, are attended by a high state of painful sensation, the expression of which is generally most acute, and is described by the patient as cramping, cutting, grinding, and rending, whence such pains have derived those denominations. The pains thus excited are of the most distressing nature, and are frequently evidenced by violent vociferation and gesticulation.

A variation will, however, be occasionally found dependent upon the nature of the part to which the translation has been made; thus, if it is determined to the rectum or bladder, a degree of correspondent motion for their respective evacuations will accompany it, attended by a sense of expulsion or bearing down, whence such pains have often been mistaken for real uterine pains, both by the patient and accoucheur; so much so, that an idea has been entertained, until corrected by experience, that the head of the child has been undergoing expulsion.

This connexion of acute pain, with the graver expression of the nisus of the urinary or fæçal

organs, is what has been mistaken, as before noticed, for the succession or co-existence of dilating and expulsive action.

In the metastatic state it rarely happens that the pain ceases with the paroxysm, but remains partially after it has gone off; in bed-side language it is said to linger, which it does more or less in the parts affected, which also retain a sense of soreness and tenderness, particularly when pressed upon.

After the cessation of the paroxysm of metastatic pain, the patient will often fall into a state of unrefreshing slumber, from which she will awake frequently with starting, agitation, or anxiety; or she will be harassed by sickness or faintness.

The metastatic state is attended by much anxiety and restlessness, and the mind is particularly depressed, anxious respecting the result, and forbodes danger.

The effects of true uterine action are widely opposed; it is particularly marked by the freedom from distress attending its states of relaxation; if the patient happens to slumber, it is productive of refreshment, and she awakes to a renewal of her task with contented resignation. All classes of animals, from the commencement of parturition, seem affected with apparent anxiety as to its process and result; nor is the human female likely to be exempt; when, however, the genuine uterine

action is proceeding, this anxiety never amounts to that extreme of agitation, depression, or restlessness, which characterize the metastatic state; on the contrary, when the parturient effort has abated, she will be found satisfied, cheerful, and resigned, without faintness or lingering remains of pain to debilitate and fatigue her.

The above symptoms will be found more or less to accompany this variety of the metastatic action, although it is by no means necessary that they should be conjointly present.

With respect to their ratio operandi; the lingering pain and state of muscular soreness, without doubt depend upon the over exertion of the muscles. The mental affections are more difficult to account for, arising from that inexplicable connexion which is kept up by means of the nervous system between the body and mind. The states of weariness, faintness, and sickness, are to be referred to the exhaustion produced by this kind of pain, or to sympathetic actions of the stomach or arterial system.

The farther history of the metastatic affection of the muscular system, and its causes, will be considered when we come to treat of it with a view to practical purposes.

2. *Of the metastatic Excitement of the arterial System.*

We have seen the translation of the parturient energy to the muscular system, producing various spasmodic affections of the same; it may also be determined to the arterial system, exciting in it different varieties of increased action, similar to what are produced by the sources of excessive action in a morbid state of the general system.

It will be impossible, in the present essay, to enter into a general pathologic consideration of the arterial system, or even to approximate towards it; it can only be partially adverted to, with a view of illustrating the effect of the present modification of the metastatic principle, so as to explain certain important phænomena produced by it.

When an increased activity of any part of the arterial system is induced, the circulating fluid is carried, with an increased momentum, into those parts, giving rise to effects which will be more or less modified or complicated.

If the increased action consists of simple determination of blood to the part affected, the effects will be conformable to the structure or nature of the same, and the degree of determination; thus, if the determination is made to the cuticular surface, an increase of heat and redness

will only be excited; in some parts of the system, when acting in a minor degree, it will simply occasion an increased activity of the functions of those parts; but, in a greater or excessive degree, may be so far incompatible with their welfare, as to interrupt their functions entirely: thus a slight degree of determination to the brain produces increased activity of body and mind, but an excessive one will induce apoplexy, epilepsy, *&c.*

The principle of inflammation may become superadded to the above state of simple determination, giving rise to various peculiar symptoms; thus excessive action of the skin, conjoined with the inflammatory principle, will be manifested in erysipelas of the brain; in phrenitis, *&c.*

Or the state of increased action may become sympathetically connected with the nervous system, giving rise to the various phænomena of fever.

It is conceived that the above states of morbid action may be equally induced during parturition, by the metastatic determination of the parturient energy, as by any other source capable of inducing such derangement.

It is presumed that the operation of the above principle is capable of producing certain states of deranged parturition, some of which are peculiarly interesting and important, *viz.*:

1. The metastatic action may give rise to simple

and excessive determination of blood to the brain, occasioning

a. A state of convulsion known as puerperal convulsion.

b. A state of syncope or hysteria.

c. It may give rise to febrile state.

The excitement of inflammation is here omitted, although it has been noticed by authors as occurring during parturition, and conceived to produce a distinct state of difficulty; it appears, however, to be rarely induced by the mere metastatic translation of the parturient energy; it is certain, however, that it may originate directly from local irritation, and become an exciting cause of the metastatic state, and as such it will be considered hereafter.

The above enumerated modifications of the increased states of arterial action will receive farther consideration in the practical part of the essay.

D. The parturient energy is suspended, so that it ceases to actuate any part of the uterine or general system.

Under a state of metastatic action, although the uterine system fails to be actuated, nevertheless the parturient nervous energy continues in force, so as to produce effect in some other part; under a state of suspension, however, the whole of the

system continues, equally with the uterus, in a quiescent state; the energetic principle either not being sufficiently produced to give rise to the extraordinary action; or, if produced, having been improperly expended; or else it lies dormant and inert.

If it be true that the parturient actions are maintained by the same nervous principle, generated by the brain, as gives rise to the various phænomena of the general system, are governed by the same laws, and liable to the same states of derangement, we cannot hesitate to admit, that the same causes which in one would influence its production, and interrupt or suspend its actions, would occasion similar effects in the other.

These accidents are well known to occur in the general system, and to diminish, and often eventually annihilate, the whole vital functions. The effects of taking away blood, the exhibition of opium, lead, and the diseased states of apoplexy, coma and syncope, are instances of it.

Suspension of the parturient energy may arise from the following causes:

1. The nervous power may be insufficiently produced.

2. The nervous power may have been exhausted.

3. The irritations of the uterine orifice, which should determine the nervous power to actuate

the uterine muscles, may be insufficient to excite such effect.

1. *The nervous Power may be insufficiently produced.*

There appears to be a strong similarity between the metastatic state of the parturient energy and its suspension; many of the exciting causes of the one are exciting causes of the other; thus the emotions of mind, produced by the entrance of the accoucheur, will in some instances give rise to the metastatic state, while in others the process of parturition will for a time be entirely suspended.

It is not improbable, therefore, that the states of suspension dependent upon a diminished production of nervous energy, may originate from the same principle, and depend upon a more powerful application of the same causes as produce the metastatic state.

There is another reason to induce a belief that the metastatic, as well as suspended state, is connected with diminution of nervous energy, which is that most of its causes, whether predisposing or exciting, are such as have a manifest tendency to diminish the supply of, or to expend largely, the nervous power.

A deficient production of nervous energy will be particularly occasioned by mental affections of the depressing kind, in which it is conceived that

the production by the brain is lessened; if the depressing passions are only in a minor degree, metastasis will be occasioned; if excessive, the effect will be suspension of the present kind.

Various other causes, it is presumed, will produce similar effects, as bleeding, the poison of lead, perhaps opium, and other narcotics or sedatives, and various morbid states of the brain itself, as coma, apoplexy, *&c.*

2. *The nervous Power may have been exhausted.*

In this second kind of suspended action the nervous energy is supposed to have been properly produced, although, as in the preceding case, its quantity becomes ultimately too defective to produce any extraordinary action in the system, which is in consequence rendered passive.

The above deficiency, it is presumed, is produced by the application of excessive irritations, which occasion large expenditure of nervous power.

The exhaustion arising from metastatic action also appears capable of occasioning suspension; hence women will fall asleep during severe states of it, the paroxysm being rendered more irregular than under genuine uterine action. It is also, occasionally, the natural termination of the metastatic state, the case becoming suspended for an indefinite time, until, a new production of nervous

power having taken place, the parturient action becomes re-established.

In fact, every cessation from the parturient effort, or the action of its modifications, may be considered as a state of suspension, and the intervals between the paroxysms as natural consequences of a temporary diminution of the nervous power. It is, however, only as producing an unusual delay or interruption in the process, that suspension is to be considered a subject of pathologic research, except as it may assist in illustration.

This state of suspension may be induced by the exhaustion of protracted and painful parturition; by an improper use of wine, spirits, and other diffusible stimuli, also by excessive mental affections of the exciting kind.

3. *The Irritations of the uterine Orifice, which should determine the nervous Power to actuate the uterine Muscles, may be insufficient to excite such Effect.*

This third variety of suspension may be considered as of mechanical origin, certain accidental circumstances of position preventing the proper application of the uterine contents to its orifice, thus weakening the irritations which should excite the uterine contractions, and occasioning more or less suspension of the process.

It may be produced by the following causes:

a. By an oblique situation of the os uteri, in consequence of which the fœtal head gravitates upon some part of the cervix, or anterior part of the uterine tumor, instead of upon the orifice.

b. By malposition or malconformation of the fœtus, by which the head, or any other firm presenting part, is prevented from being applied to the uterine orifice.

c. An excessive quantity of the liquor amnii may prevent the proper stimulus being applied to the os uteri.

d. A sudden evacuation of the liquor amnii, while the uterus is in an inactive state, is not an unfrequent source of suspension, the uterine parietes remaining in a relaxed and uncontracted state around their contents, and the presenting part not being pressed with sufficient firmness upon the orifice; in this case the suspension will continue until the contractility of the uterus has restored the pressure.

Rupture of the uterus may also produce this kind of suspension, the child receding from the orifice into the abdominal cavity.

It is obvious, however, that the present kind of suspension will principally operate at, or previous to, the commencement of parturition; and thus rather protract the preparatory than the actual parturient state.

SECTION III.

OF DEVIATIONS PRODUCED BY MECHANICAL OBSTRUCTION TO THE EXPULSION OF THE UTERINE CONTENTS.

Having considered at large, the deviations originating from the state of the parturient principle, the explication of which is the chief object of the present essay; it is not proposed to enter, in a very detailed manner, into the consideration of the remaining deviations, of which the principles of doctrine and practice, are already so admirably defined as to admit of little improvement, except as they may be found connected with the better intelligence of the parturient actions. The subsequent account must, therefore, be looked upon as an imperfect sketch, drawn with a view to complete the general outline of a system, the different parts of which will remain to be filled up at a future period.

As the first class of deviations is connected with the vital or nervous principle, the second is to be considered of a mere mechanical nature.

The present deviations arrange themselves naturally under two heads:—

A. Mechanical obstruction, arising from fault of the uterine contents.

B. Mechanical obstruction, arising from fault of the maternal structure.

A. Of mechanical Obstruction, arising from Fault of the uterine Contents.

It must be obvious, that difficulty from the present source can only be produced by the fœtus itself; its appendages, in no instance, being sufficiently bulky to occasion mechanical obstruction.

The fœtus may give rise to obstruction, from circumstances connected with its position or form.

The position of the fœtus, or, as it is more generally expressed and understood, its presentation, may be unfavourable in the following ways:—

1. Instead of the vertex presenting, some other part of the head opposes itself to the uterine orifice, constituting what has been termed its malposition. Two chief varieties of this kind of obstruction have been noticed, *viz.*,
   - *a.* Presentation of the forehead.
   - *b.* Presentation of the face.
2. Other parts than the head may present, as
   - *a.* The nates.
   - *b.* The inferior extremities.

c. The superior extremities.

d. The back, belly, or sides.

The form of the fœtus may be improper, and thus give rise to obstruction. This may be in consequence of

1. Malconformation.
2. Disease.
3. Death.

B. Of mechanical Obstruction, arising from Fault of the maternal Structure.

It may consist of

1. Deformity of the bones composing the pelvis.

Of this kind of obstruction, several varieties have been noticed, which it is immaterial to enumerate.

2. Obstruction of the soft parts, connected with the passage for expulsion. The following are the chief varieties:—

a. Cohesion of the vagina or labia.

b. Tumors obstructing the capacity of the pelvis or vagina.

c. Protrusion of the bladder into the vagina.

d. Calculus in the bladder.

e. Hernia within the vagina.

SECTION IV.

OF DEVIATIONS ARISING FROM ACCIDENTAL CIRCUMSTANCES.

THERE remain several states, or circumstances, which materially influence the process of parturition, and are in no respects referable to the former heads of deviation; these we are induced to include under the general term "Accidental."

This term is selected, because, although some of these states are intimately connected with deviations of the parturient energy, and others with irregularity, or lesion, of the structure of the uterus, or its contents, they are generally produced by causes purely adventitious; and notwithstanding they occasion a deviation in the process, afford no instance of deviation from the laws of parturition. The above head is to be considered as comprising a number of states, which have no connexion with, or relation to, each other.

Of these states the following may be enumerated:—

A. Premature expulsion.

B. Hæmorrhage.

C. Retention of the placenta.

D. Rupture of the uterus.

E. Laceration of the perineum, *&c.*
F. Inversion of the uterus.
G. Extra-uterine conceptions.
H. Plurality of children.
I. Protrusion of the umbilical cord.

A. Of premature Expulsion.

The customary period at which human parturition commences, is the end of the ninth month from the time of conception, when the cervix uteri is fully expanded, and the uterine contents brought into a state of approximation to its orifice.

Deviations from this general law are, however, by no means uncommon. The expulsion of the uterine contents, may be effected at any period intermediate to conception, and the full time of uterogestation. The parturient actions may then be said to be prematurely excited, and the process has been considered as that of premature parturition.

In all cases of premature expulsion, the expelling power is similar to what produces the state of mature expulsion, the uterine contents being thrown out by contractions of the uterine muscles; the difference consists in those contractions being too early excited.

The characteristic symptoms will, however, differ according to the period from conception, at

which the state of premature expulsion takes place.

It is proposed to enquire briefly into the causes which precipitate the uterine muscles into premature action, and into the varieties of that prematurity which require a variation of practical attention.

Premature expulsion may be produced by

1. Causes, affecting the uterine system.
2. Causes, affecting the general system.

The uterine causes consist of irritations applied to some part of the uterine system, so as to excite contractions of the uterine muscles. These may be,

a. A dead fœtus.—When the life of the fœtus has ceased, its influence upon the uterine and general systems is materially varied, and it appears to become an irritating mass, having the effect of an extraneous body, in consequence of which a series of actions are commenced for its separation. It is probable, that the contractile or tonic power of the uterus, in this state, operates so as to gradually obliterate the cervix, and allow the presenting parts of the child to come into contact with the os uteri, when the parturient contraction is excited. Or, possibly, the stimulus of the lifeless mass, may, in a direct way, excite sufficient muscular action to accomplish the obliteration of the cervix.

b. Evacuation of the liquor amnii.—This may occasion the death of the fœtus, or it may induce uterine action, by allowing the solid and unequal parts of the child to come into immediate contact with the uterine parietes, and, by their stimulus, to induce sufficient action to obliterate the cervix.

c. Distention from the liquor amnii, has been named as a cause of premature labour: it appears, however, without reason, as the uterus possesses a power of adapting itself to its contents, so as never to be fully distended.

d. Irritations applied to the os uteri, or neighbouring parts. These may be sufficient to induce corresponding efforts of the uterine muscles; attempts at dilatation, the application of acrid substances to the os uteri, and vagina, and excessive sexual indulgence, are to be considered as belonging to the present head, and are most generally applied through improper design or interference; they may, however, be the effect of disease, as when produced by the mechanical irritation of piles, or a loaded rectum.

The production of premature expulsion, by causes affecting the uterus, through the medium of the general system, depends upon a sympathetic excitement of that organ.

As the nervous energy, during parturition, is capable of being determined, by metastasis, from the uterus to a distant part of the general system,

so may it, previous to parturition, be determined by the same principle of metastasis, from a part of the general system to the uterus, producing a state of action of that organ.

This propagation of action to the uterus, may finally prove the cause of premature parturition, either by directly exciting active parturient paroxysms, or by inducing an inferior state of action of the muscular fibres, sufficient to produce the expansion of the cervix, so as to admit the presenting part of the uterine contents, to produce the necessary action on the os uteri to commence parturient efforts.

Hence every action of the system, with which the uterus has a tendency to sympathize, or which can excite metastatic determination from the uterus during parturition, may, in a reverse way, prove an exciting cause of premature action.

The varieties of these causes are almost innumerable; they may, however, be comprised under the following arrangement:—

Febrile, and other morbid states, particularly derangements of the abdominal viscera.

Local injuries.

Excessive bodily exertions.

Passions of the mind.

It has been stated, that the symptoms accompanying premature expulsion of the uterine con-

tents, are varied according to the period at which that expulsion occurs.

The symptoms of this anticipated state do so far differ, that the process has, for practical purposes, been separated into two distinct varieties:

a. Miscarriage, or abortion.

b. Premature parturition, as generally so called.

a. Miscarriage, or abortion.—In this case, the expulsion of the uterine contents takes place before the end of the sixth month, when the fœtus is too imperfectly matured, to be able to exist externally, and independently of the uterine system.

It is, most commonly, and particularly in the earlier instances, characterized by the uterine contents being excluded in one mass, accompanied by considerable hæmorrhage: when, however, it occurs near the end of its limited period, the concomitant symptoms resemble those of proper parturition, the fœtus and its appendages being expelled separately, and the liability to hæmorrhage lessened.

b. Premature parturition,—This occurs after the commencement of the seventh month, and previous to the period when natural parturition would take place; at a time when the fœtus has arrived at such maturity, as to be capable of sub-

sisting upon external nutriment, and of supporting the full office of respiration.

Its process evinces little, if any, variation from that of parturition at the full period, the uterine contents being thrown off by the same successive operations, *viz.*, the liquor amnii is first discharged, afterwards the fœtus, and lastly the placenta and membranes.

Nor is it peculiarly liable to hæmorrhage.

B. Hæmorrhage.

Uterine hæmorrhage is far from being uncommon during the pregnant or parturient state; its occurrence is however, most generally a symptom of some other deviation, so that it is rarely to be considered as an idiopathic affection.

So far as it is sympathetic, its consideration should be embraced under the heads of the deviations which it accompanies; as for instance, of abortion, or difficulties attendant upon the expulsion of the placenta.

There is, however, one form of uterine hæmorrhage, which is sufficiently marked by causes and symptoms peculiar to itself, to authorize its being treated of as a distinct state of accidental parturition; this is, that hæmorrhage which occurs during the last three months of uterogestation, from an attachment of the placenta over or near the uterine orifice.

The placenta, it has been seen, is naturally attached to the fundus of the uterus; occasionally, however, it is found misplaced, so as to be implanted wholly, or partially, over the orifice or upon the cervix; in this situation it is productive of no derangement until the period arrives when the expansion of the cervix commences; as it possesses no power of accommodating itself to the change of dimensions of the cervix, it then necessarily becomes more or less separated, and gives rise to floodings of the most dangerous nature, the diameter of the arterial vessels being at that time so greatly enlarged as to admit of an instantaneous excessive effusion of blood. The above alarming position of the placenta, which no art can foresee or care prevent, is attended with the highest danger to the patient; the treatment is, however, well defined and understood, and if properly observed, will generally rescue the unfortunate patient from that fate, which would otherways be inevitable.

Hæmorrhage has also been noticed, as occurring where the placenta is properly situated, from a degree of separation occasioned by partial contraction of the uterus, the effect of external violence, or other causes; its occurrence is, however, rare.

C. Of Retention of the Placenta.

The future recovery of the patient is greatly dependent upon a proper expulsion of the placenta, as many of the subsequent diseases of the puerperal state may be traced to irregularities in that process.

The proper expulsion of the placenta, is effected by paroxysms of uterine action, similar to what have previously expelled the child.

In proportion as the child is propelled through the os externum, the contracting uterus closes upon it; when the expulsion is complete, the uterine parietes are left embracing the placenta, the presenting portion of which is applied to the circle of the uterine orifice; the stimulus hence afforded, soon gives rise to a renewal of the action of the uterine muscles, which is followed by the exclusion of the placental mass.

The above appears to be the true and natural process, and it is probable that the subsequent after-pains are dependent upon a continuance of the same process, being excited by the irritation of coagula, *&c.*, upon the os uteri.

A satisfactory expulsion of the placenta, as above described, does not however always take place; sometimes the uterine contraction is delayed for a considerable time; in other instances, it acts partially or imperfectly, producing an in-

complete separation, accompanied by alarming hæmorrhage; or consists of an improper state of contraction, incompatible with the expulsion of the placenta.

These states of derangement are almost uniformly produced by mismanagement; under the attentions of a careful accoucheur they rarely occur.

The great source of their origin consists in hastily and improperly making use of manual efforts to extract the uterine contents, without allowing the uterine efforts to effect, or assist in, their expulsion.

Thus, for instance, when the head of the child has been expelled, if the remaining parts are drawn away during an ensuing interval, without the co-existence of uterine action in aid of such extraction, it is evident that the uterine parietes will be left in a relaxed state around their remaining contents, whereas they ought to embrace them firmly; an obvious consequence will be, that the stimulating effect upon the orificial circle will be inadequate to excite a proper renewal of the expulsive effort, it will consequently be protracted until the contractile or tonic powers of the uterine fibres have removed the source of delay; or the contraction, if excited, may be irregular or partial, or of the metastatic nature.

It is of the highest importance, therefore, with

a view to a favourable expulsion of the placenta, not to hurry away the child; on the contrary, it should rather be kept back, to compel, as it were, the uterus to a forcible ejectment of its contents.

Nor should the placenta itself be taken away by forcible means, as its expulsion ought, in every instance, to be the effect of uterine action, otherways the arterial orifices may not only be left in an unobliterated state, occasioning hæmorrhage, but cavities may remain for the reception of internal bleeding or the accumulation of coagula, producing great subsequent distress, or the most imminent danger. Even in such cases where manual assistance may be necessary for the separation and removal of the placenta, the hand and whole uterine contents, the objects of expulsion, should be stedfastly retained in the uterus, until forced out by its contraction.

It is most probable, that the lamented event which has lately afflicted our country, is to be attributed to an inadvertent want of attention to the above rules, originating from no intentional neglect or deficient information upon the subject, but from an excessive anxiety to preserve, in the first instance, the very important life of the infant, and afterwards to terminate the protracted sufferings of the unfortunate and highly interesting mother.

The chief varieties of placental retention are

1. Simple retention, through deficiency of contraction, occasioned by irregular, suspended, or metastatic state of the actuating principle.

It is not the intention of the author to treat the present subject practically; he cannot, however, omit noticing the advantage he has derived in expediting the paroxysm for placental expulsion, where it has been protracted beyond his wish, from stimulating, with one or two fingers, the circle of the uterine orifice; this should be strongly impressed, but at the same time without material distress to the patient.

It is the opinion of most, that the placenta should not be delivered too soon after the child, and that a certain delay is preferable. Viewing this part of the process as a continuation of the same actions which expel the child, it has been the author's opinion, that, if properly managed, it cannot be too soon completed; his practice has been regulated accordingly, and the placenta is generally expelled within five minutes from the birth of the child, and he can assert with the most satisfactory result; cases of hæmorrhage, after-pains, and puerperal disease, being comparatively unknown to him.

2. Partial separation of the placenta. This gives rise to hæmorrhage, and is the effect of an insufficient or irregular contraction.

3. Hour-glass contraction of the uterus.

This is produced by irregular contraction. It will rarely occur, except where the child has been dragged away with some degree of force, and without the proper assistance of uterine action, in consequence of which the uterus is left in an oblong form, its fundus extending upwards above the umbilicus; if under such state, a partial contraction of the circular fibres of the uterus towards its middle should take place, the hour-glass contraction must inevitably be produced; in this case the uterus becomes divided into two compartments, so as to resemble an hour-glass, some part of the remaining contents being grasped firmly by the contracted portion, or retained in the superior compartment; in this state, no subsequent action of the uterus will be sufficient to expel it, without manual assistance.

If an anterior portion is partially, or wholly detached, the hour-glass contraction may be accompanied by alarming hæmorrhage.

4. The separation and expulsion of the placenta may be impeded in consequence of diseased structure, producing a preternatural adhesion to the uterus. Its structure is certainly sometimes found unusually firm, or ossified, or with schirrous appearance; cases of difficulty from this source are, however, not very frequent.

D. Of Rupture of the Uterus.

Rupture of the uterus may be the effect of manual interference, as in the operation of turning, but is occasionally produced by excessive action of the uterine muscles. The only case the author ever met with was of this kind, and occurred under a considerable deformity of the os sacrum, projecting into the pelvis; the uterine paroxysms were so violent as ultimately to rupture the uterus, before it was thought prudent or necessary to lessen the head of the child.

E. Laceration of the perineum, *&c.*
F. Inversion of the uterus.
G. Extra uterine conceptions.
H. Plurality of children.
I. Protrusion of the umbilical cord.

These remaining varieties are purely accidental, having no relation to the parturient energy, and are therefore passed over without farther consideration, their enumeration being sufficient.

CHAPTER IV.

A SYNOPSIS OF PARTURITION.

HAVING passed through the consideration of the most prominent facts connected with the physiology and pathology of parturition, it is proposed to attempt a synoptical arrangement of the varieties of the parturient state, as they may be found to be naturally derived, from the doctrinal principles which have been made manifest.

In making such attempt, the author hopes he shall not be accused of unwarrantable presumption, when it is recollected that previous systems have been founded, rather upon the specious appearances of symptoms, or the nature of the practical attentions which the respective genera have required, than upon the laws and principles which regulate the parturient state, and give origin to the proximate causes of the more important deviations.

The utility of synoptical arrangement, as an adjuvant in the discrimination of deranged action, is universally acknowledged; he therefore trusts his present attempt may not be found unaccept-

able to the profession, and particularly to those who may be disposed to admit the correctness of the principles on which it is grounded.

In forming this synoptical view, it has been his anxious wish to deviate as little as possible from the arrangements and nomenclature of previous authors; nevertheless, it has been impossible to avoid the introduction of new terms and definitions.

The adoption of the English language to express the distinctive titles of the present synopsis, has necessarily required a greater or less detail of words, as no terms exist in that language sufficiently comprehensive to denote their respective characters. It was, indeed, easy to coin from the Greek and Latin languages, a nomenclature which would have compendiously embraced this object, but the author was unwilling to obtrude upon his readers, the accumulation of new terms which would thus have become necessary.

Nevertheless, as the brevity which such a nomenclature would afford, is considered a desideratum in systematic arrangements, he has been induced to attach to his synoptical view, in the form of a parenthesis, correspondent terms derived from the above sources, in which case the Greek derivations will be found in a marginal reference. In his private practice he has found this more brief nomenclature useful and convenient,

and, to those who may be disposed to adopt the doctrines and practice which the present treatise inculcates, it may prove of advantage.

To facilitate its application, a table is attached, comprising, under one view, such abbreviated nomenclature;—its connexion with the general synopsis will be obvious.

In the synoptical view which is advanced, where the characteristic terms do not appear sufficiently distinctive to serve for the purpose of a definition, additional definitions will be attached; these will, however, be formed with as much brevity as is consistent with correct discrimination.

In all cases, however, where the characteristic terms may be considered to fully answer the purpose, or supersede the necessity of further definition, it has been avoided; this will be found generally to hold good throughout the mechanical and accidental orders.

THE

SERIES OF CLASSES AND ORDERS.

CLASS I.

NATURAL PARTURITION. (Eutocia*.)

CLASS II.

UNNATURAL PARTURITION. (Dystocia†.)

ORDER I. *Unnatural Parturition, originating from Derangement of the parturient Energy.* (D. nervosa.)

ORDER II. *Unnatural Parturition, arising from mechanical Obstruction.* (D. mechanica.)

ORDER III. *Unnatural Parturition, arising from accidental Circumstances.* (D. accidentalis.)

* Ab ευ bene, et τοκεω pario.

† A δυς male, et τοκεω pario.

CLASS I.

NATURAL PARTURITION. (Eutocia.)

THE process of parturition is conducted throughout in strict conformity with the principles which nature has established; no deviations, originating from the action of the parturient energy, from structure, or from accident, occur to interrupt or derange it, and it is happily terminated without requiring or admitting any assistance from art.

GENUS 1. *Labour without painful Action.* (Hilaosis*.)

The vertex of the fœtal head presents; the paroxysms recur at regular intervals; during their continuance the uterus forms a tense contracted viscus; the uterine contents are, at the same time, pressed firmly downwards in the direction of the passage; the accompanying sensations are referable to the os uteri, vaginal passage, or contiguous parts; they do not amount to pain, but consist of a forcing or bearing down; the case terminates most favourably within six hours.

* Ab ἱλαω propitius sum.

* Natural Labour. *Burns, Hamilton, Denman, &c.*

* Easy Labour. *Cooper.*

* Eutocia simplex. *Merriman.*

☞ The asterisk, prefixed to a synonym, denotes that it is partial or imperfect.

CLASS II.

UNNATURAL PARTURITION. (Dystocia.)

THE present class embraces every deviation from natural parturition, and, in all cases, requires or admits of adventitious assistance.

ORDER I.—Unnatural Parturition, arising from Derangement of the parturient Principle. (D. nervosa.)

GENUS 2. *Labour, with painful uterine Action.* (Oxytocesis*.)

The parturient energy produces perfect uterine paroxysms; the paroxysms are attended with spasmodic pain of the organs of parturition.

* Natural Labour. *Hamilton, Burns, Denman, &c.*

* Easy Labour. *Cooper.*

* Dystocia simplex. *Merriman.*

* Ab οξυ acutè, et τοκεω pario.

GENUS 3. *Labour, with partial uterine Action.* (Merergasis*.)

Certain portions of the uterine muscles are contracted under the paroxysm, other portions remaining in a flaccid state; the contraction is of the spasmodic kind.

* Dystocia diutina. *Merriman.*
* Dystocia anenergica. *Merriman.*
* Tedious labour. *Burns.*

GENUS 4. *Labour, with metastatic Determination to muscular Parts.* (Myopathia†.)

The paroxysm is unattended by contraction of the uterine muscles; it affects muscular parts distinct from the uterus, exciting in them spasmodic, acute, grinding or rending, pains; and is generally succeeded by lingering pain, or soreness, continuing during the interval.

* Dystocia diutina. *Merriman.*
* Dystocia anenergica. *Merriman.*
* Tedious labour. *Burns.*
* Lingering, slow, painful, and difficult labour. *Variorum.*
* Laborious labour. *Hamilton.*

* A μερος pars, et εργαζομαι operor.
† A μυς musculus, et πασχω patior.

Sp. 1. Affecting the muscles of the belly. (*M. abdominalis.*)

Sp. 2. Affecting the muscles of the back or loins. (*M. lumbaris.*)

Sp. 3. Affecting the hips and thighs. (*M. coxalis.*)

Sp. 4. Affecting the muscles attached to the os sacrum, or os coccygis. (*M. sacralis.*)

Sp. 5. Affecting the muscular structure of the bladder. (*M. vesicalis.*)

Sp. 6. Affecting the muscular structure of the rectum or sphincter ani. (*M. rectalis.*)

Genus 5. *Labour, with Metastatic Determination to the Arterial System.* (Angiosmus*.)

The paroxysm is unattended by contractions of the uterine muscles, the parturient energy actuating the arterial system.

Sp. 1. Labour, with convulsions. (*A. epilepticus.*)

The increased arterial action affects the cerebral organs, and produces convulsions of the epileptic kind.

Ecclampsia. *Sauvages.*
Complicated labour, Order 4, *Burns.*
Complex labour, Sect. 4. *Hamilton.*
Dystocia convulsiva. *Merriman, Young.*
Puerperal convulsions. *Variorum.*

* Ab αγγος vas, et ωθεω impello.

Sp. 2. Labour, with faintness, or hysteria. (*A. syncopalis.*)

The increased arterial action affects the cerebral organs, and produces faintness, or hysteria.

Complicated labour, Order 3. *Burns.*
Dystocia syncopalis. *Merriman, Young.*

Sp. 3. Labour, with fever. (*A. febrilis.*)

The increased arterial action becomes sympathetically combined with the nervous system, and produces the phænomena of fever.

Dystocia inflammatoria. *Young, Merriman.*

Genus 6. *Labour, with Diminished Production of the Parturient Energy.* (Apenergesis*.)

Suspension of the parturient actions takes place, in consequence of the parturient energy being insufficiently produced.

Genus 7. *Labour, with Exhaustion of the Parturient Energy.* (Asotia†.)

Suspension of the parturient actions takes place in consequence of the parturient energy having been exhausted.

* Ab απο ab, et ενεργεω ingenero.

† Ab α priv., et σωζω servo.

GENUS 8. *Labour, with Defective Irritation of the Os Uteri.* (Anerithismus*.)

Suspension of the parturient actions is produced in consequence of the irritation of the os uteri being insufficient to excite the contractions of the uterine muscles.

* Ab α priv., et ερεθιζω irrito.

ORDER II.—Unnatural Parturition, arising from Mechanical Obstruction. (*D. Mechanica.*)

A. As relating to the fœtus, and affecting its position.

GENUS 9. *Labour, with Malposition of the Fœtal Head.* (Dyscephalis*.)

Dystocia perversa. *Merriman.*
Præternatural labour, Ord. 5. *Burns.*
* Laborious labour, Sect. 1. *Hamilton.*

Sp. 1. The forehead turned towards the pubis. (*D. frontalis.*)
Sp. 2. The face presenting. (*D. facialis.*)

GENUS 10. *Labour, with Presentation of Parts distinct from the Head.* (Heterophasis†.)

Dystocia transversa. *Merriman.*
———-- perversa. *Young.*
Præternatural labour. *Burns, Hamilton.*

Sp. 1. Presentation of the breech. (*H. clunalis.*)
Sp. 2. Presentation of the inferior extremities. (*H. inferiorum.*)

* A δυς male, et κεφαλη caput.

† Ab ἑτερος alius, et φαινομαι apparco.

Sp. 3. Presentation of the superior extremities. (*H. superiorum.*)

Sp. 4. Presentation of the back, belly, or sides. (*H. mediorum.*)

B. As relating to the fœtus, and affecting its form or structure.

Genus 11. *Labour complicated, with Malconformation of the Fœtus.* (Cacogonia*.)

Præternatural Labour, Order 7. *Burns.*

Genus 12. *Labour complicated, with Disease of the Fœtus.* (Nosogonia†.)

Sp. 1. With a collection of fluid in the head. (*N. hydrocephalica.*)

Sp. 2. With a collection of fluid in the abdominal cavity. (*N. ascitica.*)

Genus 13. *Labour complicated, with a dead Fœtus.* (Necrogonia‡.)

Sp. 1. With separation of the bones of the head from each other, in consequence of putrefaction. (*N. segregata.*)

Sp. 2. With distention of the abdominal cavity

* A κακος malus, et γονη fœtus.

† A νοσος morbus, et γονη fœtus.

‡ A νεκρος mortuus, et γονη fœtus.

by air generated in consequence of putrefaction. (*N. inflata.*)

C. As arising from fault of the maternal structure.

GENUS 14. *Labour, with Deformity of the bony Structure of the Pelvis.* (Amorphia*.)

* Dystocia ab angustia. *Sauvages.*
——— amorphica. *Merriman, Young.*
Laborious labour, Sect. 3. *Hamilton.*
Laborious or instrumental labour. *Burns.*
Impracticable Labour. *Burns.*

GENUS 15. *Labour, with Obstruction from deranged Structure of the soft Parts.* (Emphraxis†.)

Dystocia ab angustia. *Sauvages.*
Dystocia obturatoria. *Merriman.*

Sp. 1. From cohesion of parts. (*E. cohesiva.*)

Var. *a.* Of the vagina.
b. Of the labia.

Sp. 2. From gibbous tumors. (*E. gibbosa.*)

Varieties numerous.

* Ab αμορφος deformis.
† Ab εμφρασσω infarcio.

ORDER III.—Unnatural Parturition, arising from Accidental Circumstances. *(D. Accidentalis.)*

GENUS 16. *Labour, with premature Expulsion of the uterine Contents.* (Protocesis*.)

Sp. 1. Abortion, the expulsion taking place before the termination of the sixth month. *(P. abortiva.)*

Sp. 2. Premature labour, the expulsion taking place subsequently to the termination of the sixth month. *(P. prematura.)*

GENUS 17. *Labour, with uterine Hæmorrhage.* (Hæmatochoe†.)

Dystocia hæmorrhagica. *Merriman, Young.*
Complicated labour. Order I. *Burns.*
Uterine hæmorrhage. *Variorum.*

Sp. 1. Hæmorrhage occurring previous to parturition, during the last three months of uterogestation; produced by detachment of some part of the placenta, which is more or less misplaced over the uterine orifice. *(H. formidata.)*

§ The remaining species are symptomatic of other deviations.

* A προ ante, et τοκεω pario.
† Ab αἱμα sanguis, et χοη libatio.

GENUS 18. *Labour, with Difficulty in the Expulsion of the Placenta.* (Opseplacia*.)

Dystocia retentiva. *Merriman.*

Sp. 1. Retention of the placenta from deficient, or imperfect, uterine action; unattended by hæmorrhage. *(O. retentiva.)*

Sp. 2. Partial separation of the placenta, attended with hæmorrhage. *(O. hæmorrhagica.)*

Sp. 3. Retention of the placenta, in consequence of its being grasped by an irregular contraction of the uterus, affecting its circular fibres, and occasioning a resemblance to the shape of an hour-glass. *(O. clepsydroidea.)*

Sp. 4. Retention of the placenta, in consequence of its separation being prevented by callous, indurated, or schirrous stricture. *(O. callosa.)*

GENUS 19. *Labour, with Rupture of the Parietes of the Uterus.* (Dryptometra†.)

Complicated labour. Order V. *Burns.*
Complex labour. Sect. IV. *Hamilton.*

* Ab οφις sero, et πλακους placenta.

† A δρυπτω lacero, et μητρα uterus.

GENUS 20. *Labour, with Laceration of Parts connected with the Passage of the Fœtus.* (Sparagma*.)

Dystocia laceratoria. *Merriman.*

Sp. 1. Of the Vagina. *(S. vaginale.)*
Sp. 2. Of the perinæum. *(S. perinæale.)*
Sp. 3. Of the labia. *(S. labiale.)*
Sp. 4. Of the ligaments of the pelvis. *(S. ligamentosum.)*

GENUS 21. *Labour, with Inversion of the Uterus.* (Metrelasis†.)

Dystocia inversoria. *Merriman.*

GENUS 22. *Labour, connected with extra uterine Conception.* (Eccmetria‡.)

Extra uterine pregnancy, *Burns,* p. 150, *et variorum.*

Sp. 1. The fœtus situated in the ovarium. *(E. ovarina.)*
Sp. 2. The fœtus situated in the fallopian tubes. *(E. fallopiana.)*
Sp. 3. The fœtus situated in the cavity of the abdomen. *(E. abdominalis.)*

* A σπαραασσω lacero.

† A μητρα uterus, et ελαυνω abigo.

‡ Ab εκ ex, et μητρα uterus.

GENUS 23. *Labour, with Plurality of Children.* (Diplosis *.)

Dystocia gemina. *Merriman.*
Præternatural labour. Order VII. *Burns.*
Complex labour. Sect. I. *Hamilton.*

GENUS 24. *Labour, with Presentation of the umbilical Cord.* (Omphalophasis †.)

Præternatural labour. Order VI. *Burns.*
Dystocia a secundinis elapsis. *Sauvages.*

* A διπλωσις duplicatio.

† Ab ομφαλος umbilicus, et φαινομαι appareo.

A TABLE

OF THE

ABBREVIATED NOMENCLATURE.

CLASS I. *EUTOCIA.*

GENUS 1. *Hilaosis.*

CLASS II. *DYSTOCIA.*

ORDER I. NERVOSA.

GENUS 2. *Oxytocesis.*

GENUS 3. *Merergasis.*

GENUS 4. *Myopathia.*

Species 1. M. abdominalis.
2. M. lumbaris.
3. M. coxalis.
4. M. sacralis.
5. M. vesicalis.
6. M. rectalis.

GENUS 5. *Angiosmus.*

Species 1. A. epilepticus.
2. A. syncopalis.
3. A. febrilis.

GENUS 6. *Apenergesis.*

GENUS 7. *Asotia.*

GENUS 8. *Anerithismus.*

ORDER II. MECHANICA.

GENUS 9. *Dyscephalis.*

Species 1. D. frontalis.
2. D. facialis.

GENUS 10. *Heterophasis.*

Species 1. H. clunalis.
2. H. inferiorem.
3. H. superiorum.
4. H. mediorum.

GENUS 11. *Cacogonia.*

GENUS 12. *Nosogonia.*

Species 1. N. hydrocephalica.
2. N. ascitica.

GENUS 13. *Necrogonia.*

Species 1. N. segregata.
2. N. inflata.

GENUS 14. *Amorphia.*

GENUS 15. *Emphraxis.*

Species 1. E. cohesiva.
2. E. gibbosa.

ORDER III. Accidentalis.

Genus 16. *Protocesis.*

Species 1. P. abortiva.
2. P. prematura.

Genus 17. *Hæmatochoe.*

Species 1. H. formidata

Genus 18. *Opseplacia.*

Species 1. O. retentiva.
2. O. hæmorrhagica.
3. O. clepsydroidea.
4. O. callosa.

Genus 19. *Dryptometra.*

Genus 20. *Sparagma.*

Species 1. S. Vaginale.
2. S. perinæale.
3. S. labiale.
4. S. ligamentosum.

Genus 21. *Metrelasis.*

Genus 22. *Eccmetria.*

Species 1. E. ovarina.
2. E. fallopiana.
3. E. abdominalis.

Genus 23. *Diplosis.*

Genus 24. *Omphalophasis.*

PART II.

PRACTICAL OBSERVATIONS

RELATIVE TO

PARTURITION.

"Τῶν δ' ὡς λόγου μόνου ξυμπεραινομένων μὴ εἰὴ ἐπαύρασθαι, τῶν δὲ ὡς ἔργου ἐνδείζιος." HIPPOCRAT. *Præcept.*

"IT is not possible to derive advantage from those conclusions which are drawn from reasoning only; but from those which are demonstrated by practice."

CHAPTER I.

Preliminary Observations.

HAVING traversed through the physiological and pathological regions of the obstetric science, with the view of acquiring more correct information respecting the nature and arrangement of the facts which it presents, it becomes desirable to ascertain, what practical advantage may be derived from our labours.

The investigation which has been entered into has not been devoid of novelty; in the attentive prosecution of it, principles hitherto latent have become manifest; others, previously seen only in a state of distant obscurity, have received an elucidation, which has, with more correctness, defined their true forms and importance; while some, like the deceptive appearances viewed by the traveller in an indistinct horizon, have vanished on attempting to enter into contiguity with them

But relinquishing this metaphorical language, it may be fairly inferred, on the supposition that the opinions which have been advanced respecting the metastatic, as well as other principles, are correct, that the practical attentions which parturition

will require must be materially and importantly influenced by them.

We proceed to a consideration of the practical remarks which have been suggested to us, and which we can confidently assert, in their general and more important points, have not only been confirmed by experience, but have originated from an attentive observation of facts, instead of being founded upon views of hypothesis or theory.

In prosecuting this subject, it is not intended to give a general treatise on the practice of midwifery; but to embrace chiefly such practical points as are, more or less, immediately connected with the action of the parturient principle.

The present consideration will, therefore, principally be limited to the deviations arising from the state of the parturient energy, constituting the first order of the second class of unnatural parturition, a division which embraces a large majority of the most distressing cases of parturition.

In elucidation, however, it will be necessary, in the first place, to take in the consideration of the first class, constituting parturition in its most natural and simple form.

Nor is it intended to enter, in the present essay, into a full and complete practical detail of the various genera included in the above arrangement; these will be treated of only so far as they may be

found necessarily affected by, or required to illustrate the views of physiology, pathology, and practice, which the author has been led to entertain.

The order of mechanical deviation has already received from numerous admirable practitioners and writers, the fullest illustrations of principles and treatment which it appears to be susceptible of; the author has not the presumption to think, that he can contribute to its better intelligence, or the improvement of the practical means recommended in it; he, therefore, declines entering upon the subject.

With respect to the order of accidental deviations much might be said as connected with the parturient principle; he is induced, however, to wave its consideration for the present.

CHAPTER II.

CLASS I.

NATURAL PARTURITION.

"THE process of parturition is conducted throughout in strict conformity with the principles which nature has established; no deviations, originating from the action of the parturient energy, from structure, or from accident, occur to interrupt or derange it, and it is happily terminated without requiring or admitting any assistance from art."

GENUS I.

LABOUR WITHOUT PAINFUL ACTION.

"The vertex of the fœtal head presents; the paroxysms recur at regular intervals; during their continuance the uterus forms a tense contracted viscus; the uterine contents are at the same time pressed firmly downwards in the direction of the passage; the accompanying sensations are referable to the os uteri, vaginal passage, or contiguous parts; they do not amount to pain, but consist of a forcing or bearing down; the case terminates favourably within six hours."

As the present class affords but one kind of parturition, it is thought proper to comprise its classific and generic consideration under one and the same head.

The happy state of parturition, which is described in the above definitions, is, unfortunately, under the present state of society, to be regarded as almost an ideal or imaginary process; its realization, although rare, however, is occasionally accomplished, but is to be viewed rather in the light of an exception to a general rule, as few cases will be met with, however favourable in their terminations, which do not verge, more or less, into deviation from it. The classific and generic definitions appear sufficiently distinctive and characteristic; to insure this, they have perhaps been made longer than was necessary, that no difficulty might be found in discriminating between the simple state of natural parturition, and those variations which require the assistance of the accoucheur.

The commencement of the present genus, of labour without painful action, is preceded by the various preparatory and precursory symptoms, which have been noticed above, in the physiological part of the essay. Of these the expansion of the cervix uteri, the completion of which is indicated by the separation and discharge of the

gelatinous matter, which had previously sealed up the uterine orifice, may be considered as producing the most important influence on the subsequent parturient actions, in consequence of the presenting parts being then admitted into contiguity with the os uteri. The diminution of the general bulk of the uterine viscus, arising from the contractile action of its muscular fibres, is also an immediate precursor of parturition.

During the progress of these preparatory actions, more or less pain is, in general, experienced; the nature of this pain has been before alluded to in an imperfect manner; the present opportunity will be taken of giving it a more full consideration.

This pain has been called spurious, because its action has been found unproductive of dilating effect, and it has consequently been considered as exerting but little influence over real parturition. As its occurrence is always antecedent to the complete expansion of the cervix, the want of dilating effect attending it, might *a priori* be inferred, as it is evidently an impossibility that such effect could be produced in consequence of an impulse made upon the immediate orifice of the uterus, while any portion of the cervix remained unobliterated. As a correspondent axiom, it must also be inferred, that pain occurring subsequent to the completion of cervical expansion will cease

to belong to the spurious or precursory kind, but must necessarily be considered as forming a part of the series of true parturient effects.

It is, however, by no means asserted, that the state of precursory pain, although it is not to be considered as a symptom of existing parturition, is unconnected with uterine action, or is without influence upon the production of the expulsive state. Although no dilatation can take place during its continuance, the action of the uterine muscles may be excited in connexion with it, and this in two ways.

1. The expansion of the cervix may have advanced so far as to allow sufficient pressure on the orificial or cervical nervous structure, to excite a state of action of the uterine fibres.

2. The uterine action may be excited by sympathetic connexion with some other part of the system, as under states of visceral or mental affection, *&c.*, without any reference to the degree of cervical expansion.

In the first case, the action induced, if confined to the uterine muscles, will have a tendency to promote the more speedy expansion of the cervix, and thus expedite the commencement of the state of dilatation.

Or the system not being fully prepared, the irritation, instead of exciting direct action of the uterine muscles, may be expended in the production of metastatic action, frequently of the

muscular kind, inducing occasionally a long continued state of intense suffering, the uterus, although the medium of deranged action, remaining throughout in a passive state.

In the second case, where the uterine muscles are sympathetically excited, the action produced may be sufficiently powerful to give rise to a state of premature expansion, and ultimately of premature expulsion; in this way it is to be regarded as an occasional cause of prematurity; or the uterine action, becoming again re-converted by a second metastasis, may produce correspondent muscular affections; or the cause of the primary action ceasing, its effects may also wholly cease.

It will generally be found in practice, that precursory pains are of the metastatic nature, and their effects of the muscular kind, and wholly extra uterine; they will, however, occasionally consist of true uterine action, so as evidently to expedite the parturient state.

As their effects are frequently distressing, and their utility in all cases doubtful, their alleviation or removal is a point of much importance. It may be briefly stated, that their causes and effects, virtually corresponding with what has been assigned to the genus of labour with metastatic translation to muscular parts, we refer to that head, as the treatment must be conducted in conformity with what is there advanced.

When the preparatory state is completed, the true actions of parturition commence; these are usually ushered in by degrees of rigor, or other sympathetic affections of the general system, excited in consequence of the now active parturient energy, not being as yet decidedly and fully determined to and fixed upon the uterine system; the regular paroxysm being once established, these symptoms disappear. Another effect of the same incipient action is the production of a temporary diarrhœa; this is a common symptom, and is probably influenced by the contiguity of the rectum with the os uteri, and their congenial supply of nervous structure; upon the same principle, a frequent disposition to evacuate the contents of the bladder is excited.

It frequently happens, that the precursory symptoms are diminished, and even lost for some time immediately preceding the commencement of parturition, during which period the patient will be sensible of an unusual exemption from previous distress, and enjoy comfortable and refreshing sleep. There can be no doubt but that this state of quiescence gives occasion to a more active and accumulated state of the nervous power, and thus contributes to the excitement and energy of the succeeding parturient actions.

At length the contractions of the uterine muscles commence, and the parturient paroxysm is esta-

blished; the contents of the uterus are pressed down with considerable force upon the orifice, and a powerful effort is made to expel them through that orifice; the hand applied to the abdomen at this time will ascertain the powerful contraction.

If the structure connected with the passage is perfectly disposed to yield to the impulse, a single paroxysm may effect the whole dilatation, and the child will be forthwith protruded.

Such termination is, however, unfrequent, nor s it desirable, as it implies a greater state of re-axation or want of tone in the system, than is compatible with the welfare of the patient; hence t is seldom found to take place, except when the unfortunate subject is sinking under the last stage of debility, as in phthisis, *&c.*

The facility with which the parts yield to the uterine pressure, will be proportionate to their disposition to dilate, and the propelling power; hence a very great diversity will be produced as to the number of paroxysms, and the time necessary to effect the expulsion. It is conceived, that a case of the present genus will be terminated in six hours, although so long a period will rarely be required.

The first paroxysm being insufficient, a similar one is, after a period of relaxation, repeated, and these repetitions recur until the final effect is produced.

It is not easy to define the duration of the interval or period of relaxation, as it will, necessarily, be modified by the activity of the cerebral production of nervous power; it will, however, most materially depend upon the state of stimulus or irritation applied to the uterine orifice, so that the more largely and firmly the presenting parts are applied to that orifice, the more forcibly and speedily will the succeeding paroxysm be excited; hence, the paroxysms, at first feeble and protracted, will, under a given state of nervous production, become, in proportion to the progress, powerful and soon reiterated.

Various illustrations of the above position might be advanced. If the waters are evacuated without the accompaniment of uterine action, the uterus becomes relaxed, the presenting parts recede from the os uteri, and an indefinite state of protraction will be induced. If the uterus becomes ruptured, the presenting parts recede, and the paroxysm ceases to be renewed, although the contents may not have wholly escaped into the abdominal cavity. On the contrary, the violent and continued efforts ensuing from impaction of the uterine contents in the vagina, are well known.

During the above process of the parturient action, the os uteri is, in the first instance, dilated so as to obliterate the barrier between the uterus

and the vagina; at this period it is usual for the membranes to rupture, and the waters to be evacuated; should such effect not take place spontaneously, it is generally proper, at this time, to produce it artificially. This part of the process is distinguished as completing the first stage of labour.

The head of the child now descends into the vagina, and is afterwards expelled through the os externum, followed by the remaining parts of its body, and completing the second stage.

In a short time, the uterus again renews its action, and the placenta and membranes are excluded; this event terminates the parturition, and concludes the third and last stage.

The disposition of the uterus to contract, does not, however, yet cease; it universally happens, that portions of the membranes will be left behind, or that hæmorrhage with coagula, or other secretions from the internal surface of the uterus, will succeed the general expulsion; to produce the discharge of these matters, the uterus, from time to time, renews its actions, occasioning what have been termed after-pains.

The above three stages, into which it has been customary to divide the process of parturient expulsion, are not founded in nature, the distinctions being arbitrary, as they do not evidence any distinction of principle; the division may, however,

prove useful in practice, as describing the different periods of the process.

The diagnostic consideration of the present Genus, may be briefly dismissed; it is distinguished from all other states of parturition, by the regularity and efficacy of its paroxysms, as connected with the absence of painful sensation.

This favourable kind of parturition, in itself, does not require any assistance from art to facilitate its process; the practical indications connected with it are, consequently, few, and such only as are required to prevent it from lapsing into deviations, which would disturb the propitious process.

It is, however, particularly disposed to become connected with painful actions of the uterine organs, so that few, if any, cases will be found which do not, in some part of the process, manifest that state, which is, indeed, the common form of the more favourable cases of human parturition, under the present state of society. Could it be ensured that this deviation would not extend itself to any distressing degree, its occurrence would be unworthy of notice, as the progress and termination of the case would be sufficiently satisfactory, and the attempt to remove or prevent the painful state by active measures, by suggesting to the apprehensive mind of the patient, the possibility, or the

existence, of danger, might precipitate the mischief which it was intended to avert.

It possesses, also, a powerful disposition to deviate into metastatic affections of the muscular kind, as well as other varieties of the nervous order. This may be safely obviated by a strict prevention of their peculiar exciting causes; in particular, the confidence and spirits of the patient should be kept up, and the accession of every depressing passion prevented; attention should also be paid to obviate accumulation in the bladder and rectum; the premature evacuation of the liquor amnii should be guarded against, and its discharge always, if possible, accompanied by uterine action.

A strict attention must be given to detect the first occurrence of deviation, and to obviate it as far as is consistent; with this intention, a close observation of the case, confirmed by occasional examinations per abdomen, vel vaginam, will be necessary.

Laceration of the perinæum, must be carefully guarded against, by affording it support, during the expulsion of the child.

It is of high importance that the body of the child should not be extracted in a forcible or hurried manner, when the head or shoulders have been protruded; the whole should be left to the

power of uterine action; nor should the placenta be removed without that removal being accompanied by the same uterine assistance.

The latter doctrine will be found of the greatest consequence, in securing a fortunate and easy termination of the third stage, or the expulsion of the after-birth, and also in preventing subsequent hæmorrhage and after-pain, and in influencing the future recovery of the patient.

We shall take the present opportunity to consider the principal features of placental expulsion, and to define the rules which ought to regulate the practice connected with it.

The placenta is separated from its attachment to the uterus, by the contractions of the uterine muscles, and is afterwards expelled by the same active power. A forcible attempt made to remove it, previous to its separation, may produce an inversion of the uterus, or, by a partial separation, occasion alarming hæmorrhage.

Nor, after such separation, should it be extracted by manual assistance, without the conjoint operation of the uterus, as that viscus not having contracted itself during such removal, would be left in a relaxed state, its arteries not sufficiently closed to prevent effusion, and thus, internal or external hæmorrhage, with accumulation of coagula and excessive after-pains, will be produced; much danger may be incurred by

such interference, and possibly death itself may close the scene.

A proper expulsion of the child, is also necessary for the correct separation of the placenta; every portion of the child should be expelled by the uterine effort; the uterus being then left contracted upon its remaining contents, these will become firmly opposed to the orifice, and speedily excite a renewal of the uterine action; nor can hæmorrhage readily occur, or hour-glass contraction be formed, under this state.

If the uterus is then tardy in re-commencing its action, it may be slightly agitated by extending the cord, and allowing it to recede suddenly, or by rubbing gently, or making pressure upon, the uterus, through the abdominal parietes; or, what will be found more efficacious, the action may be induced, by stimulating with one or two fingers that portion of the vagina or cervix, where the obliterated os uteri had been situated.

CHAPTER III.

CLASS II.

UNNATURAL PARTURITION.

"THE present class embraces every deviation from *Eutocia,* and, in all cases, requires or admits of adventitious assistance."

Having considered the previous class, as comprising the state of simple and natural parturition only, it must follow, that every deviation from that natural process, ought to be embraced under a distinct head of classification; in conformity, therefore, with the practice of former writers, it has been thought right to arrange them under one class of *Unnatural Parturition,* a term denoting a state of deviation from the natural process.

The various states of deviation are again distinguished under an ordinal arrangement, in which the natural consanguinity of each genus is, as far as possible, observed, and of which we have before intimated our intention only in the present essay to treat of the following:—

ORDER I.—*Unnatural Parturition, arising from Derangement of the parturient Energy.*

The principles on which this ordinal division is founded, have been fully detailed in the pathological part of the essay; we, therefore, pass on to the practical consideration of the genera attached to it.

CHAPTER IV.

Genus II.

LABOUR, WITH PAINFUL UTERINE ACTION.

"THE parturient energy produces perfect uterine paroxysms; the paroxysms are attended with spasmodic pain of the organs of parturition."

The present genus embraces a considerable portion of the more common cases of parturition, including the majority of such as, under the present state of society, have been denominated natural labours; in which, although the state of pain and suffering will not allow them to be referable to the former propitious state of parturition, the termination takes place favourably, without the supervention of any material deviation to interrupt it.

It is stated in the above definition, that the present genus is characterized by pain of the spasmodic kind, accompanying the paroxysm of uterine action, and affecting the immediate organs of parturition. This pain may be referred to two varieties; one embracing affections of the organs of expulsion, or the uterine muscles; the other of the organs of resistance, consisting of the os uteri, the vagina, perinæum, and external parts; the

distinction is, however, immaterial in practice, and will be waved in the future consideration.

In other respects, the process is similar to what has been described, as characterizing labour without painful action.

In the pathology, the nature and sources of the concomitant pain have been amply considered.

The present genus is to be readily distinguished from the preceding one, which is without pain, and from metastatic determination to muscular parts, in which the seat of pain is foreign to the parturient organs.

The prognosis cannot be, with any correctness, defined; so long, however, as the case is strictly referable to the present genus, a favourable termination may with certainty be looked for; the time required will depend upon the degree of resistance offered to the uterine efforts, and the power of those efforts, and will generally comprise from six to twelve hours; although it will frequently prove much less, it will rarely be more protracted.

The present variety of parturition does not commonly require much practical attention, as when it is proceeding properly, a regular and satisfactory progress will be observed; nor is it desirable to shew too much interference, under such state, as its appearance may excite an anxious impression on the mind of the patient, which may be productive of more serious deviation; on the

contrary, time must be given to allow the parts to dilate and develope themselves.

Notwithstanding, it is generally possible to diminish the severity of the spasmodic pain, from which the peculiar distress of the case originates, and when the patient is materially suffering, it will be desirable to attempt its alleviation; this may be effected by the antispasmodic treatment, as opium, fomentations, friction, *&c. &c.* The adhibition of these means, will be found largely treated of under the head of metastatic determination to muscular parts.

As the spasmodic pain, which is characteristic of the present genus, has been considered chiefly to originate from increased resistance to the uterine efforts, produced by a tonic state of the resisting parts, or a want of disposition to dilate, it is worth while to consider how far this principle of resistance may be obviated by art.

The removal of increased opposition of the resisting parts, may be attempted in three ways:—

1. By diminishing the tone of the resisting powers.

2. By increasing the force of the propelling powers.

3. By superadding an artificial impetus in aid of the propelling powers.

1. *By diminishing the Tone of the resisting Powers.*

This may be attempted by topical relaxants, as fomentations, injections, *&c.*; their use as relaxants is, however, doubtful, although they may be efficacious in relieving spasm.

Abstraction of blood has been strongly recommended by some, in protracted cases which have been supposed dependent upon rigidity; without doubt, it would prove a powerful agent in inducing relaxation; nevertheless, as it is frequently considered by the patient a formidable operation, and, by exciting mental anxiety, might risk the production of more serious deviation, it is to be cautiously recommended, nor should it be resorted to except in severe cases.

Purging would have a similar tendency; the length of time which its production requires, is, however, an objection to its use.

Emetics, nauseating doses, and even the injection of tobacco-smoke, and the warm bath, have been employed with the above intention, their use has, however, been deservedly censured.

One general and decided objection, to all the above modes of fulfilling this intention, may be stated,—that they have a tendency, also, to weaken the acting powers, aud thus to counteract their own good effects.

2. *By increasing the Force of the propelling Powers.*

As far as this can be done by preserving a cheerful and happy state of the mind, it is most highly desirable.

The use of cordials, diffusible stimuli, and other excitants, with this intention, and as is the practice of the vulgar, is entirely inadmissible, as they are powerful exciting causes of the metastatic state. A similar or parallel general objection to what has been stated against relaxants, also exists against excitants, that they have equally a tendency to increase the resisting powers as the propelling ones.

3. *By superadding an artificial Impetus in aid of the propelling Powers.*

The only way, without resorting to instrumental means, in which this intention can be answered, is by artificial dilatation of the os uteri, or vaginal passage. It is certain, that the application of a sufficient degree of mechanical force will always be able to overcome the given resistance of any opposing part; the question is, how far, in the present case, this principle may be allowed to regulate our practice; and whether the advantage gained will compensate for the pain inflicted upon the patient, and the risk of producing subsequent difficulty.

The practice of artificial dilatation has been recommended by some, and highly deprecated by others; it may therefore be inferred that circumstances may exist, in which it will be found serviceable or detrimental.

Such is the great state of sensibility with which the parts connected with parturition are occasionally endowed, particularly in those cases where the spasmodic affections are situated in the vaginal passage or parts contiguous, that the slightest attempt at interference, even for necessary examination, is scarcely sustained without much distress; in such cases, all forcible attempts are cruel and inadmissible, and will risk the production of the most important deviations. It may be laid down as a rule, that where the os uteri, &c., will not bear freely pressing upon with the point of the finger, or where the act of examination gives distress to the patient, every degree of artificial dilatation is decidedly improper. Nor, under such circumstance, would any moderate application be capable of producing the desired effect, as the spasmodic pain, then necessarily excited, will supersede and oppose the dilating effect.

Nor should it in any instance be applied where the progress of the case is satisfactory.

Cases will, however, be met with, in which, although the uterine action is apparently powerful, and regularly exerted on the uterine orifice,

without any evident metastatic connexion, little proportionate progress will be made, while, at the same time, the os uteri will evince so little sensibility, as to allow the freest liberties from the point of the finger; in this case it appears evident, that the want of progress is to be attributed to the want of yielding principle, admitting of a slow dilatation of the parts; artificial dilatation may here be used with the happiest effects, and a case which would otherways prove lingering and tedious, may be advanced to an early and satisfactory termination *.

* Feb. 1, 1818, I was summoned to attend Mrs. G. with her first child. On my arrival, I found that she had experienced a precursory kind of pain for some hours, but had not been sensible of the sensation of bearing down, until a short time previous. The paroxysm now came on every four or five minutes, and appeared to act powerfully, the abdominal examination evincing strong contraction of the uterus, and the vaginal one a correspondent impulse on the os uteri. The latter part was, however, of very rigid feel, lying obliquely towards the sacrum, and scarcely in the least degree dilated. After the above promising action had continued for two hours, little or no sensible progress was made. I now determined, as the uterine orifice and vagina manifested no peculiar sensibility, to try the effect of artificial dilatation. This was steadily and gradually effected, while the uterus continued under a state of contraction, and produced, each time, a sensible effect; from time to time it was discontinued, to ascertain the effect of the natural efforts; during this delay no progress could be observed; in the course of three hours the os uteri was well dilated, and, without distress to the patient, the membranes ruptured, and

Artificial dilatation of the os uteri should be made with the soft and feeling surface of the point of the first finger, steadily and forcibly moving it around the circular rima, during the continuance of the paroxysms; care should, however, be taken that the pressure does not excite material pain.

Under similar circumstances the same cautious dilatation may be used with advantage to the perinæum; in this case the operation will be best effected with two fingers.

It is by no means intended to recommend the above for general practice, and when used, it must be effected with the utmost caution and delicacy.

There remains one circumstance to be noticed, which occasionally proves an exciting cause of spasmodic uterine action, and gives a necessity

the head received on the perinæum; here it lay for three hours, or more, before it was extruded, the uterus continuing to act strongly and regularly; during this part of the process the same cautious dilatation was used, and with the same apparent good success, and want of progress during any period of discontinuance. On the second day, I had the pleasure of finding my patient out of bed, and free from every unfavourable symptom: in short, I do not recollect a more propitious recovery.

This female, possibly, possessed hereditary right to slow dilatation; as her mother, who had given birth to eight children, had, in every instance, experienced protracted labour of from six days to thirty hours; at all events, I am satisfied, that without the above interference, she would have experienced a most tedious parturition.

for more powerful and reiterated paroxysms; this is an unusual strength or thickness of the membranes, in consequence of which, their rupture, and the succeeding descent of the fœtal head, is prevented.

The obvious treatment is to rupture them. Some caution is necessary as to the best time of effecting this.

The membranes should never be broken until the os uteri is well dilated, so that the septum between the uterus and vagina is obliterated, or nearly so; nor is it desirable to rupture them even then, if the protruding bag is found favourably descending with each paroxysm into the vagina, or upon the os externum, particularly in a case of first parturition.

When, however, the os uteri is well dilated, the evacuation of the liquor amnii, from allowing the presenting parts to be more fully and forcibly applied to the uterine orifice, will generally increase the power of the uterine efforts, and materially expedite the expulsion. In rupturing the membranes, particular care should be taken to effect it during a paroxysm of uterine action; otherways, the pressure being taken from off the uterine orifice, a degree of suspension will be produced.

CHAPTER V.

Genus III.

LABOUR, WITH PARTIAL UTERINE ACTION.

"CERTAIN portions of the uterine muscles are contracted under the paroxysm, other portions remaining in a flaccid state; the contraction is of the spasmodic kind."

Partial actions of the uterine muscles, although noticed by authors, are not of common occurrence; it is probable, however, that they have been confounded with metastatic muscular affections, to which they are much allied; nevertheless experience has proved that they do sometimes occur.

The partial contraction is best detected by feeling the state of uterine action through the abdominal parietes, when the uterus will be found at certain points under a state of contraction, rising into hard and elevated bumps, while the remaining parts are quite flaccid, and allow an easy impression by the fingers; in short, no doubt will exist, that a part only of the uterine muscles are actuated.

The contractions are of a spasmodic nature, attended by much expression of pain, and succeeded by great soreness on touch of the parts affected.

The examination per vaginam shews a want of action, the incomplete contraction being incapable of producing any propelling effect. It is distinguished from painful uterine actions by the want of effect on the os uteri, and from metastatic determination to muscular parts by the state of contraction, however partial, which the abdominal examination presents.

In its causes, effects, and treatment, it is so strongly allied to the succeeding genus, as not to require a separate consideration upon these points.

CHAPTER VI.

Genus IV.

LABOUR, WITH METASTATIC DETERMINATION TO MUSCULAR PARTS.

"THE paroxysm is unattended by contraction of the uterine muscles; it affects muscular parts distinct from the uterus, exciting in them spasmodic, acute, grinding, or rending pain, and is generally succeeded by lingering pain or soreness continuing during the interval."

SECTION I.

Of the general Symptoms.

A CASE of parturition, which is, during its course, to become the subject of metastatic determination to muscular parts, commences and proceeds, for a greater or lesser time, with every characteristic of natural labour; it is preceded by the usual preparatory symptoms, evidenced by the subsidence of the abdominal tumor, vaginal discharge, and approximation of the presenting parts to the uterine orifice; after these symptoms have taken place, the occurrence of paroxysms of uterine action producing sensible effect on the os uteri, marks the actual commencement of parturition.

These paroxysms proceed at intervals from an indefinite period, producing a regular, proportionate, and favourable effect on the progress, so as to warrant the anticipation of a propitious termination. At length, in the midst of this encouraging prospect, the patient becomes anxious, restless, and desponding; the nature of the pain undergoes an evident change; the uterine action ceases, and the metastatic state is established; the immediate progress of the case is arrested; and the unfor-

tunate patient is plunged, from a state of comparative ease, and of the most promising expectation, into procrastinated suffering and difficulty.

This unpropitious state may occur under any degree or period of progress; it may take place immediately after, or even at the commencement, of parturition; or, on the contrary, when the head of the child is partially excluded through the os externum; when the case has previously been making the most rapid progress, and it appears occasionally to exert an influence after the fœtal expulsion, producing effect upon the extrusion of the placenta and the subsequent after-pains.

The establishment of this unfavourable state is invariably indicated by the deficiency of uterine contraction, and the consequent want of effect upon the os uteri, for these are always to be considered as synonymous during parturition.

When it occurs, it is evident that no progress can be made, and that every moment of its continuance will be productive of protraction and unnecessary distress to the patient.

The change which has taken place, will be ascertained by both the abdominal and vaginal examination, the former will evidence the want of uterine contraction, the abdomen being found flaccid and relaxed; the latter will prove that the uterine contents are in no respect pressed down upon the orifice, so as to afford a possibility of

dilating it; or upon the vaginal passage, in the more advanced state of the process, in such way as to produce any advancement of the fœtal head through it.

It will also be particularly marked by the expressions of pain uttered by the patient.

As an axiom it may be laid down, that when a change takes place from uterine to metastatic action of the muscular kind, *et vice versâ*, a change at the same time takes place in both the nature and situation of the accompanying pain, hence it is of great importance to watch strictly the variations of pain; if during the metastatic state it has been situated in the back, when a change takes place it will shift into the abdomen; when it has been in the abdomen previously, it may change to the back; but the most common and desirable change is, to find, when the uterine action is re-established, that the pain is referred to the region of the uterus itself, or of the pelvis, and is materially blended with the sense of bearing down upon the os uteri, or vaginal passage.

It is characteristic, therefore, of the commencement of this metastatic state, that the pain accompanying the paroxysm is referred to a part which was not before affected; it will be found to occupy more frequently the abdominal or lumbar muscles, and occasionally those of the hips, thighs,

bladder, and rectum; but these points will be more fully considered hereafter.

The nature of the pain also undergoes a material change; it becomes exceedingly acute, is described as grinding, cutting, or rending, and produces every indication of extreme distress; the unfortunate patient clings to her attendants for support, her features frequently become distorted, and she is compelled by unsupportable agony to loud vociferation.

When, however, the bladder or rectum are affected, the above acute expressions of pain will be more or less mixed with graver tones, indicative of an expulsive or bearing down action, and which, in fact, arise from imperfect efforts of the above organs to expel their contents. Care must be taken to distinguish these efforts from uterine action, which they so much resemble as to have been heretofore described as evidences of that action.

The parts affected are not merely thrown into a spasmodic and painful state during the paroxysm, but continue during the intervals of relaxation to suffer considerable uneasiness; the pains are said to linger, and the part affected remains remarkably sensible to the touch.

The distress of mind arising from painful sensation, anxiety, and consciousness of unsatisfac-

tory progress, becomes highly aggravated, and the patient is rendered fretful and desponding; no assurance can cheer or sooth her, and her apprehensions anticipate the most dreadful result. Besides the immediate distress of this mental suffering, it has also an unfavourable influence upon the future progress of the case; as, from being an exciting cause of the metastatic state, it will contribute to prevent the restoration of uterine action.

The mind will not be found the only part of the system affected by this unfavourable modification of the parturient actions; the body participates, and becomes fatigued, harassed, and debilitated; the patient, wearied and exhausted, falls, during the intervals, into unrefreshing slumbers, from which she awakes to renewed sufferings, frequently with alarm and agitation.

After the state of protraction has continued for an indefinite time, it generally happens that the uterine action will be as suddenly restored, as it had previously ceased; the character of the case becomes immediately changed again, the feelings of the patient are alleviated, the state of progress resumed, and the termination will often take place with wonderful celerity.

In other instances, the patient will be so far exhausted, that the accoucheur, despairing of a natural termination, is obliged to resort to instru-

mental assistance, as the only remaining chance of liberating her from her dangerous and distressing situation.

Occasionally this unpropitious state will be succeeded by suspension, produced in consequence of the exhaustion of the parturient energy; from this the patient may be relieved by instrumental assistance; or the state of quiescence may favour a renewed production of nervous energy, which may then produce a renewal of uterine action.

As a circumstance of much importance, it may be noticed here, that, although the uterine action has been re-established, it may, notwithstanding, revert into the metastatic state, and this sometimes repeatedly. In this case a series of metastatic paroxysms may be succeeded by a series of uterine ones, and then the metastatic ones revert, *et vice versâ;* or every alternate paroxysm may be uterine or metastatic.

The same state of variation is also to be observed in an individual paroxysm, which may be composed of both actions; nor are they so incompatible, but that they may be co-existent; in these cases, the connexions of the two actions may be noticed as follows:—

1. The paroxysm may commence with metastatic, and terminate with uterine, action.

2. The paroxysm may commence with uterine, and terminate with metastatic, action.

3. Both actions may be co-existent, or simultaneous, the parturient energy being at the same instant expended upon the production of both.

These connexions will be found so common in practice, particularly the two first modifications, that few cases will be met with in which they will not be more or less instanced.

In the two first cases, the uterine action, so long as it continues, will produce its full and proper effect, in proportion to the quantity of the parturient energy, the metastatic action alone producing negation. In the latter modification, however, the sum of uterine action will only be in proportion to the deduction of metastatic action from the whole parturient energy, and its effect consonant to that diminution: thus, if the parturient energy be taken as 10, and the portion expended in the production of metastatic action as 6, the uterine action will be as 4.; if this is sufficient to overcome, in any degree, the resisting powers, a correspondent progress will be made, if not the advancement will, notwithstanding, be fully postponed.

SECTION II.

OF THE SPECIFIC VARIETIES.

In order to render the history of the present genus more perfect, it has been thought right to divide it into a number of species, deduced from the various muscular parts, to which the metastatic action may be determined; this division is, perhaps, not of any very essential importance, in a practical point of view; yet as some of the species do evidence variations of symptoms, and require peculiarity of practice, and as the distinction may assist in the better intelligence of the metastatic state, we are induced to bestow some attention on this part of the subject.

Although the muscles which are thus liable to be affected are numerous, it is not intended to treat of each individually, but to combine and arrange them in such manner as is consonant with the general or peculiar symptoms that they manifest; under this view we have noted the following species:—

1. Affections of the abdominal muscles.
2. Affections of the muscles of the back, or loins.
3. Affections of the hips and thighs.

4. Affections of the muscles attached to the sacrum, or os coccygis.

5. Affections of the muscular structure of the bladder.

6. Affections of the muscular structure of the rectum.

As the first four of the above species comprise a series of muscles which are attached to the bony frame, and are, comparatively, of external situation, they may be considered under one and the same head; it is thought proper, therefore, to distinguish them generally under the term of external muscles; they, moreover, evince similar symptoms, and are alike capable of being acted upon by external applications.

From parity of reasoning the remaining species may be combined under the denomination of internal muscles.

Of the Affections of the external Muscles.

The pain attendant upon metastatic determination to the external muscles, is always of the acute kind, described above, and the different species are only to be distinguished by attention to the seat of it; but the distinction is not of material consequence, as the same principles of treatment will be found common to all.

The state of soreness continuing after the paroxysm, may be considered as more peculiarly

a characteristic of the affection of the external muscles, probably because their sensations can be better ascertained than those connected with internal organs. This state of muscular soreness, without doubt, arises from over-distention and excessive actions of the muscular fibres in which it is situated, similar to the soreness attending a bruised or over-fatigued muscle.

It is, also, in the external muscles that the lingering pain, continuing during the intervals, is chiefly to be looked for; this state must be considered intermediate to the stronger pain of the paroxysm, and the state of soreness described above, consisting of a remnant of spasmodic action.

It will not unfrequently happen, that more than one species of the muscular affection, will be observed in the same case of parturition, and sometimes all will be manifested during its course; occasionally a single paroxysm will be compounded of more than one species.

Of the Affections of the internal Muscles.

Affections of the Bladder.—In addition to the general acute pain and distress attendant upon metastatic determination to muscular parts, the present species is always accompanied by the natural effect of the muscular action of the bladder, occasioning a motion for the evacuation of its con-

tents. This is sometimes partially accomplished, but more generally the motion is rendered ineffective, the painful action being accompanied by spasmodic affection of the sphincter, and consequent retention; or the pressure of the fœtus upon the neck of the bladder, may prevent the urinary discharge; or the muscular action may be partial, inefficient, and incapable of producing proper expulsatory efforts. The present affection is generally productive of great distress and retardation; the painful feel of want to make water, during the paroxysm, with inability to discharge it, being excessive. On applying the hand above the pubes, the bladder will frequently be found distended, but not always so, as the position of the child may occasionally press it from its natural situation, into a lateral direction; pressure above the pubes will detect great soreness of the part affected, and also produce, or increase, the want of evacuation, in the same manner as it does, under a distended bladder, in a state of health.

The muscles of the urethra and sphincter will participate in the affection.

Affections of the Rectum.—Under this state, the patient will have the sensation of fæcal evacuation, attended by much bearing or forcing exertion of that nature; this is sometimes so excessive, under the precursory state, as to induce both the patient and accoucheur (previous to examination) to fancy

that the head of the child was undergoing expulsion; the circumstance should be carefully kept in mind, as, without a correct discrimination, it may be imagined that the uterine actions are proceeding, when, in fact, they have not commenced. It rarely, if ever, happens, that this state of action produces an evacuation of fæces, probably because the affection is of an inordinate and spasmodic nature, or incomplete, or partial, so as to be inadequate to produce fæcal expulsion; or the spasmodic state, affecting the sphincter, may oppose the evacuation.

It is probable that the levator, and other muscles adjoining the rectum, will be more or less affected with that organ itself.

SECTION III.

OF THE CAUSES OF METASTATIC DETERMINATION TO MUSCULAR PARTS.

As the knowledge of the causes of the present genus, will be found of essential importance, not only in elucidating its nature, but in preventing its establishment, and procuring its removal when established, it appears desirable to enter into a detailed examination of them.

It is proposed, therefore, to consider,

1. The proximate cause.
2. The pre-disposing causes.
3. The exciting causes.

SECTION IV.

OF THE PROXIMATE CAUSE.

The consideration of the proximate cause of disease, or that cause which being present the disease is present, and being wanting, the disease does not exist, has been ridiculed and deprecated by medical writers, as involving absurdity, in confounding together the cause and its effects. The proximate cause, *ipso facto*, is that which constitutes the diseased action, and is, therefore, the disease itself, and not the cause of it.

It is not intended to enter into any disputation on the subject; and, as this species of cause has been sufficiently elucidated, in the physiological part of the treatise, it would probably have been passed over, had it not been found of utility in the synoptical arrangement which has been adopted, so as to appear to deserve notice, the generic distinctions having been deduced from it.

The proximate cause of the metastatic state may be defined "an inordinate excitement of the nervous system, originating during the process of parturition, under a state of predisposition, and on the application of an exciting cause, which produces a determination of the energetic power,

which ought to actuate the uterine muscles, and give rise to their parturient contractions to different and distinct parts of the general system, and excites them to increased action." We are fully aware that the above definition is very hypothetical, and little more than a repetition of what has been before expressed in the generic definitions. It is doubtful, however, whether under our present imperfect knowledge of the nervous system, it is possible to advance a better.

SECTION V.

OF THE PREDISPOSING CAUSES.

Predisposition to the metastatic state seems to depend upon a susceptibility of the system, to be acted upon by associations or sympathies, excited by bodily and mental stimuli.

This susceptibility appears to be intimately connected with a mobile, or peculiar, state of body and mind, deriving its origin from the present state of human society, as influenced by the acquisition of habits originally unnatural, and by the peculiarities of its moral education or constitution.

The above seems particularly indicated by the circumstance of the lower classes of animals, which may be considered as having scarcely deviated from their original natural state, being little liable to deranged parturition.

Nevertheless, under a domesticated state, these animals suffer increased difficulty in the process, and are not always exempt from danger; this circumstance is a strong confirmation of the opinion that parturition is influenced by education.

That the same rule holds good in human parturition, is rendered most probable by the fact, that

in those countries, where the refinements of luxury are unknown, and where human nature retains a comparative state of primeval simplicity, parturition nearly approaches to the above facile state of the lower animals; on the contrary, as the human female acquires more extended habits of associations and feelings, with consequent increased sensibility, the process becomes difficult, painful, and precarious. Nor does this appear, in any way, the effect of climate, as under such states of society, easy parturition is found equally to occur in the frigid and torrid zones, and in the intermediate latitudes; a further proof of the position is, that the civilized European, on being removed to such situation, experiences the same difficulties, as she would have done on her native soil.

The manner in which this disposition or liability to deranged parturition has taken place, together with the nature of that change in the constitution, by which it is effected, might prove an interesting subject of inquiry.

The Mosaic History gives us clearly to understand, that previous to the transgression of our first parent, her parturition would have been without pain and difficulty; and that labour, with sorrow, was entailed upon her as the punishment of her offence: "I will greatly multiply thy sorrow and thy conception; in sorrow shalt thou bring forth children." But this is too abstruse a subject

for the present inquiry; and it is dismissed with the following suggestion,—whether the opinions of the author do not illustrate the Mosaic account, as according to those opinions, that the metastatic state, on which the pain and difficulty is chiefly supposed to depend, originates in moral constitution; painful parturition would be a natural consequence of our mother Eve's transgression, in having from her acquisition of the knowledge of good and evil, gained new trains of sympathies, feelings, and fears, disposing her to, and exciting, the metastatic state; so that the proper and natural results of her sin would prove its own punishment.

It is probable that this peculiarity of the mental principle gives a predisposition to derangement, by allowing the exciting causes to produce a more immediate and powerful effect; and it is possible, that without it, those causes would operate too weakly to excite any action at all.

Independent of the above mental origin of predisposition to the metastatic state, peculiarity of bodily constitution, without doubt, exerts a powerful influence over that predisposition. It is difficult to say in what this peculiarity may consist; it is not, however, improbable, that it may be a mere effect of the mental state, upon whose operations and welfare, the proper state of the bodily powers is well known to be dependent.

Bodily debility alone, does not, however, appear to give predisposition, otherways than as it may influence the state of mental affection, under which it facilitates the action of the exciting causes; on the contrary, the more reduced the bodily powers are, the more easily is parturition effected, the resisting powers affording less opposition to the uterine efforts; thus women, in the last stage of phthisis, are delivered with little pain or effort.

Neither does this peculiarity of bodily constitution, depend upon a robust state of the system, as stout and laborious countrywomen have frequently easy parturition, although the process may be attended with more pain in consequence of greater efforts being required to effect the dilatation of parts: nor are women of this description exempt from metastatic action; on the contrary, they occasionally afford most obstinate and violent cases of it.

It is universally admitted, that certain states of the constitution may be transmitted, by hereditary disposition, from the parent to its offspring; the many diseases to which the human subject is thus predisposed, are well known, as gout, scrophula, *&c.*; numerous instances are also evident, of bodily structure being thus derived. There is reason to think the same principle occasionally applicable

to the predisposition to metastasis, and numerous cases might be advanced in confirmation,

In some instances which the author has noticed, of apparent hereditary predisposition to protracted parturition, he has had reason to think, the protraction depended upon peculiar structure of the cervix, or os uteri, the latter having been found very obliquely situated.

It may be concluded, therefore, that in our state of society, women of every class and constitution are predisposed to the metastatic state; but that it is more commonly found in such, as from habit or education are most exposed to variations of mental actions.

SECTION VI.

Of the Exciting Causes.

Predisposition alone is not sufficient to give rise to metastatic action; when, however, an exciting cause is superadded, that effect is produced. Nor does it seem probable, that an exciting cause will solely produce it; this must be accompanied by a state of predisposition, the concurrence of both being necessary.

The above position is instanced in the parturition of the inferior animals, where the sources of predisposition, not operating with any marked force, the metastatic state is rarely if ever excited, although the same exciting causes, which in the human subject would have been powerful in producing it, are most strongly applied, yet at the same time, their effect on the parturition of the animal shall be decided and instantaneous; thus cows, when alarmed, will prematurely slip their calves.

The exciting causes consist of irritations, applied in the parturient state, to some part of the uterine or general system, which, by acting upon the nervous system, produce either a direct determination of the parturient energy to the seat of

such irritation, or a sympathetic one of it to some distant part; and thus give rise to a counter and distinct action from what the uterus was previously experiencing.

It has been advanced, that two distinct actions cannot exist in the same part, at the same time; and though it may be doubted whether this is strictly true, it is, nevertheless, certain, that the supervention of a secondary action will diminish, if not supersede, a pre-existent one, as the irritation of a blister will relieve the tooth-ach. It is probable that this effect arises from a portion of the nervous power, which was previously actuating the primary part, being determined to the secondary one, at the expense of that primary part, which consequently becomes more or less quiescent.

Upon this principle, the production of metastasis is supposed to depend; and consonantly with it, an irritation applied to the bodily and mental system, during parturition, may determine the nervous energy, which should produce the parturient effort, to the seat of that irritation, or some other part sympathizing with it.

That bodily irritations should produce such effects, it appears by no means difficult to comprehend; the action of mental ones is by far more intricate and unintelligible.

The actions of the mind are certainly most in-

timately and decidedly connected with those of the body, so that the one cannot be materially affected, without the other participating; we must, therefore, presume, (and presumption it must be) that when during parturition, the actions of the mind are strongly and inordinately excited, that energy which ought to actuate the uterine muscles, is in some manner expended in maintaining such inordinate mental state, so as to produce a state of metastatic action, with consequent diminution of the parturient efforts.

Hypothetical as this kind of explanation may be, some confirmation and apology may be found for it in facts; since the action of the mind upon parturition as well as other animal functions, are too decided and generally admitted to be controverted, or even disputed.

The exciting causes may be classed under two heads.

1. Irritations applied to the body.
2. Irritations affecting the mind.

1. *Of the Bodily Irritations.*

The irritations affecting the bodily powers, or structure, consist of the following varieties:

A. Uterine irritations, or such as affect directly the proper uterus.

B. Vaginal irritations, affecting the vagina, perinæum, and external parts.

C. Visceral irritations, affecting the stomach, intestinal canal, and other chylopoietic viscera.

D. Vesical irritations, affecting the urinary organs.

E. Accidental irritations.

A. Of the Uterine Irritations.

In the present consideration, it appears desirable to notice some causes which have been generally considered as productive of protracted labour, but which may possibly not be found connected with the metastatic state; certain passages may therefore be met with in the following description of the causes of the metastatic state, which do not bear any strict relation to that point; they will not, however, be without utility in illustrating the subject more or less.

The following are the principal kinds of irritation connected with the uterus, which appear to excite the metastatic determination, or have been supposed to exert an influence in protracting parturition.

a. Over-distention of the uterus, from an excessive quantity of the liquor amnii, or plurality of contents. As the uterus possesses the power of adapting itself to the general bulk of its contents, and is never found, except under actual contraction, in a tense state around them, it seems proper that this cause should be rejected.

b. Irregular form of the uterine contents.

This may originate from plurality of children, or monstrosity, or disease, or improper shape or position of the bones of the head; if it exists to such degree as to produce much undue pressure on the uterus or its orifice, it may act, during parturition, as an inordinate irritation, and give rise to the metastatic state.

c. Improper position of the fœtus. It has been attempted to be established, that the action of parturition is produced, in consequence of a peculiar pressure or irritation made by the presenting parts of the uterine contents on its orifice. Admitting the correctness of this opinion, it must be evident, that if from improper position of the fœtus, its presenting parts, instead of the equal globe of the head, consist of an irregular surface, as the sharp or angular limbs of the child, a state of undue irritation may be excited sufficient to give rise to the metastatic state; or, it may happen, that the position may be such as will prevent any part of the child coming into contact with the uterine orifice, in which case the irritation will be imperfect and insufficient, consisting only of the fluctuating liquor amnii; this will give rise to a state of suspension.

d. Plurality of children. These do not appear to produce any effect from their general bulk, although they possibly may from their form or position. (See *a* and *b.*)

e. The motions of the fœtus may produce undue pressure upon the uterus and contiguous parts, as the abdominal muscles, exciting a state of spasm during the latter period of utero-gestation. After parturition has commenced, they appear to be restrained by the firmer contracted state of the uterus, and probably do not much influence the process.

f. Thickness or rigidity of the membranes. It is a common occurrence in parturition to find a degree of metastatic pain come on when the os uteri is well dilated, and previous to the discharge of the liquor amnii, which will continue until it is removed by rupturing the membranes. It would appear, that in proportion as the os uteri becomes dilated, its nerves of sensation are distributed or expanded through a larger circumference; it is possible, that in this state they may require a more impressive irritation to actuate them to correspondent uterine contraction; when the dilatation is, therefore, to a certain degree effected, the pressure of the membranes, liquor amnii, and partial application of the fœtus, may be insufficient to excite the proper action, in consequence of which the parturient energy may be misplaced. When the membranes are ruptured, and the hard head of the child allowed to press fully on the orifice, the uterine action is restored.

This cause may also obstruct, by its mechanical resistance, giving rise to painful uterine action; or

it may produce suspension, by preventing the proper irritation of the uterine orifice.

g. Premature rupture of the membranes. The proper effect of rupture of the membranes, under a state of uterine contraction, at any period of the parturient process, would be to increase the uterine efforts, by allowing the immediate exciting cause to come more directly into contiguity with the os uteri; and, in general, this effect is produced.

If, however, the os uteri is at the time suffering under any irritation, or in any way becomes possessed of too great sensibility, in proportion to the increased pressure induced by the above rupture of the membranes, it is evident that an excessive irritation will be produced, which may give occasion to the metastatic state.

When the liquor amnii is evacuated by rupture of the membranes, under an uncontracting or inactive state of the uterus, it is probable that suspension will be produced, in consequence of the uterine parietes being left in a loose uncontracted state around their contents, by which the proper apposition of the presenting parts to the orifice is prevented.

It is not unlikely that this state of suspension, will be succeeded by the metastatic state, when the uterine actions re-commence; particularly if the os uteri is in a sensible state, and the eva-

cuation has taken place in the early period of the process.

h. An opinion has been expressed, that rigidity of the os uteri, although it may, from the increased resistance it affords to the expulsive efforts, be an exciting cause of painful uterine action, is not so powerful a source of protracted parturition as has been conceived. The uterine orifice may, however, from the necessarily increased uterine efforts, be thrown into a higher state of sensibility than is compatible with the production of uterine action, and thus give rise to the metastatic state.

i. A relaxed state of the os uteri. A certain state of tone or susceptibility of the os uteri to be acted upon by the irritations of the uterine contents, appears to be necessary for the proper production of uterine action; a contrary state must, therefore, be unfavourable; it is probable, however, that this cause would rather induce degrees of suspension than metastatic affection.

k. Inflammatory state of the os uteri. This may be the effect of improper interference, or of any irritation applied to the part; it will be indicated by pain, and tenderness to the touch. The increase of sensibility, thus acquired, may induce metastasis on the principles before laid down.

In its natural state, the os uteri does not appear to be possessed of any high state of sensibility to

external irritation, and may be considerably stimulated by the finger, without exciting pain; in some cases this irritation may be of service, in producing an increase of uterine action.

l. Diseased state of the os uteri.—This is so allied to the previous causes (*h.* and *k.*), as to require no particular consideration; it can only act by the obstruction, or increased sensibility it produces.

m. Obliquity of the os uteri.—The os uteri is occasionally improperly situated, generally in an oblique position towards the sacrum, and may then be productive of deranged action in consequence of the vertex, or other presenting parts, gravitating upon the anterior part of the body of the uterus, instead of upon the orifice. It is, probably, the effect of peculiar conformation, and, consequently, women who have sustained difficult parturition from this source, will be liable to have it repeated.

B. Of the vaginal Irritations.

The causes which are liable to give rise to metastatic action, connected with the vaginal passage, perinæum, *&c.*, may be enumerated under the following heads:—

a. Rigidity and stricture.
b. Inflammatory and diseased state.

The observations above made respecting the

correspondent states of the os uteri (*h*, *k*, and *l*.) are equally applicable to the present causes, so that it appears unnecessary to say more upon the subject.

C. Of the visceral Irritations.

A large proportion of the diseases to which the human system is liable are well known to originate in a deranged state of the abdominal, and, more particularly, of the chylopoietic viscera. It is foreign to the present inquiry to enter into the history of these morbid actions; the mention of the fact is merely made as a presumptive evidence of the effects such causes are likely to produce, in the process of parturition; for it may be advanced as an axiom, that every visceral irritation which is capable of exciting a violent effect upon the general system, will also have a tendency to influence the uterine actions.

The visceral irritations which appear to have most influence over the parturient state, may be included under the following heads:—

a. The ingesta, or such substances as are received into the stomach in the shape of nutriment, may, by their quantity, or properties, or the chemical changes which may subsequently take place in them, be productive of irritation, from giving rise to the whole train of symptoms attending dyspepsia, as vomiting, flatus, spasms, *&c.*, *&c.*, with their consequent sympathetic actions.

b. The egesta, or visceral excretions, may be productive of irritation in the following manner:—

1. They may be too acrimonious from improper assimilation or qualities of the ingesta, or from the biliary, and other secretions, being in a deranged state, thus exciting diarrhœa, spasms, flatus, tenesmus, *&c.*

2. The fæcal matter may accumulate from an inactive state of the bowels, or deficient stimulating quality of that matter; this accumulation may act as an irritation upon the part where it is collected, and induce the metastatic state; it may also occasion mechanical obstruction, either directly by lessening the pelvic cavity or aperture, or b giving rise to hæmorrhoidal tumors, schirrus, *&c.*

D. Of vesical Irritations.

Distention of the urinary bladder is a frequent source of metastatic action. It may be produced by neglect of the patient, in omitting its regular evacuation, or by the pressure of some part of the child upon the urethra. A distended bladder may also produce difficulty, by the mechanical obstruction it affords, in occupying a portion of the cavity of the pelvis.

A calculus of the bladder will produce also mechanical obstruction; it is evident that it may, in addition, from the high state of sensibility which

it communicates to the bladder, prove a cause of metastatic action, particularly when pressed upon by the violence of uterine efforts.

E. Of accidental Irritations.

Under this head it is proposed to consider all such irritations as may be accidentally or adventitiously applied to the bodily system, and which have not been noticed under the previous heads. Of these the following are the more important varieties:—

a. External heat.

b. External cold.

c. Confinement of the patient too long in bed. These causes act by directly exciting the nervous or arterial system.

d. The improper use of spirits, cordials, opium, *&c.* These produce derangement of the nervous system, through the medium of the stomach; and by the exhaustion of nervous power they produce, may give rise to suspension, as well as the metastatic state.

e. Expulsatory efforts excited by the patient with the view of forwarding the labour. Such efforts consist of violent exertions of the abdominal muscles and diaphragm, and are always exceedingly improper, as the excitement of so much voluntary action can only be kept up with considerable expenditure of nervous energy; this

will not only fatigue the system in general, but in particular deprive the uterine muscles of that supply which is necessary for a proper discharge of their functions.

f. Falls and accidents, which occasion excessive and painful exertions of the uterine and other muscles, appear capable of exciting metastatic action; it is probable that they also act forcibly at the time of their immediate application, in exciting mental irritations.

2. *Of the mental Irritations.*

The actions of the mind, as exciting causes of deranged parturition, might be made to involve a series of inquiries of the highest intricacy, as they would be found to embrace the consideration of the physiology of the human mind, particularly as connected with the developement of its affections or passions. This inquiry, which belongs to the province of metaphysics, will not be attempted, as it would only be productive of inexplicable difficulty; nor is it probable that any advantage would accrue from it. It is sufficient that we know, nor can it be controverted, that external impressions are communicated to, and received by, the brain, through the medium of the nerves; and there become productive of sensations, which, being submitted to the operations of the mind, of which we know little except by its effects, give

rise to those actions, or affections, which we term the passions.

It is necessary, however, in the present place, to attempt the consideration of the effects of these passions upon parturition; it is feared that this will be very imperfectly accomplished.

The actions of the mind seem to be much influenced by the same nervous energy, originating from the cerebral circulation, as produces those of the body, and in such respect to be obedient to the same laws. If some mental faculties are encouraged to increased action, a deficiency in others must compensate; the mind like, the body, is fatigued by its action, and requires repose; an excessive expenditure of nervous power, in producing bodily action, debilitates the mind, and, *vice versâ*, an excessive expenditure of the same upon the operations of the mind, wearies and fatigues the body.

Hence it may be inferred, that where, during parturition, sufficient mental action takes place, to occasion a large expenditure of nervous power, that increased expenditure is made at the expense of the parturient muscles, the energy which would otherways have actuated them, being derived from them, in consequence of which their proper actions are lessened or suspended.

The effect may be either suspension or the metastatic action; in the former case, the suspension

will be the immediate and direc teffect of diminution of the actuating power; the latter, it is conceived, arises from a sympathetic translation of the increased mental action to the parts, which are ultimately thrown into the state of inordinate and increased action.

The passions are referable to two heads.

1. *The Exciting Passions.*

2. *The Depressing Passions.*

1. The exciting passions, in a moderate degree, are found to produce general increased action of the arterial system, and hence are productive of a more vigorous excitement of all the vital and animal functions; they, consequently, have a tendency to augment the production of nervous energy,and are rarely found to exert an unfavourable influence on parturition.

It is only when excessive, that they are productive of ill effects, their expenditure then appearing to overbalance the supply.

We have only to notice two species.

a. Joy.

b. Anger.

The latter may be generally said to be in excess; and, consequently, should be particularly guarded against.

2. The depressing passions are particularly pro-

ductive of deranged parturition, either of the suspended or metastatic kind, which, as they are frequently found immediately to precede, it may justly be inferred they contribute to excite.

There can be no doubt that they occasion a diminished state of nervous energy, but how this diminution is determined into metastatic action, we feel unable to explain; it is certain, however, that the causes in question, are capable of producing it in an immediate and remarkable manner.

The present section will be concluded, by enumerating the species of depressing passions which are most productive of the metastatic state. It will be evident that so little distinction can be observed between several of them, as, compared with others, that they are rather to be looked upon as modifications than distinct species.

a. Grief.
b. Anxiety.
c. Fear.
d. Sudden alarm.
e. Despondency.
f. Apprehension of danger.
g. Impatience.
h. Fretfulness.

SECTION VII.

OF THE PROGNOSIS.

In forming our prognosis of the probability of an early or protracted termination of cases of the present genus, it may be laid down as a general rule, that no progress can be made so long as the metastatic state fully exerts its influence.

In some cases, this state of delay has continued for a week or longer, in the midst of the most intense suffering; and it is by no means unusual for it to prevent the accomplishment of the process, for one, two, three, or more days. A propitious state of parturition, where the uterine action proceeds most favourably, will be influenced by different circumstances, as the size and adjustment of the bony pelvis, or the degree of resistance offered to the expulsion of the uterine contents by the softer parts, so that the period of delivery will not admit of an exact prognosis; it may, however, be stated generally, that the process would be completed, under such circumstances, in from one to six hours.

In proportion, however, as the uterine and metastatic states become complicated, a greater length of time must be required; so that the esti-

mate can only be formed from an attentive consideration of the state of metastatic action, as connected with its peculiar sources, and the degree of its power. The prognosis so derived is, however, necessarily very uncertain, and prudence will dictate, in all cases, where so many causes of deranged action are constantly, as it were, laying in wait to thwart us, and where so much predisposition exists in all females, to be affected by those causes, the propriety of extreme caution in expressing our sentiments; as however favourable the state of the patient may appear at the time, and the immediate termination apparently certain, a very short period may convert it into a state of determined and obstinate derangement.

It is fortunate, however, that few cases of the fullest exertion of metastatic power will occur, in which that action is not capable of being so far removed or re-converted, as to admit of a happy termination, within twelve hours from the actual commencement of the parturient process; notwithstanding, however, it will occasionally happen, that a longer period will become necessary, the determination of the misplaced energy being so decided as to afford a long resistance to every attempt to remove it. These instances are, however, rare.

In all cases, the prospect of a speedy or retarded delivery, must depend upon the facility

with which the metastatic state gives way to the means employed for its removal; this will be influenced by the nature of the causes which have given rise to it. It is evident, that the more permanent their nature, the greater and more continued will be their effects.

The predisposing causes, being dependent upon the constitutional habits or structure of the patient, do not admit of removal during parturition; fortunately, however, they do not produce metastatic action, without the co-existence of an exciting cause. It is to the latter class of causes, therefore, that we are to direct our chief attention in forming prognostic opinions; and as there is no doubt that the action of some of them is more easily arrested than of others, the consideration may be of utility.

The following inferences may be deduced. All inordinate irritations applied to the uterus, in consequence of improper position or form of the fœtus, are of a permanent nature, and therefore unfavourable. It must be recollected, however, that although these states may be the subjects of metastatic action, they belong, in a great measure, to other genera of deviations, and require their peculiar treatment.

When the metastatic determination originates from increased sensibility of the os uteri, or vagi-

nal passage, it may be expected to prove obstinate, as the cause having been once produced, cannot be at once obviated.

If obliquity of the os uteri is the exciting cause, it may continue to operate during the whole process of the orificial dilatation, although its efficacy will decrease in a kind of geometrical progression according to the proportionate increase of dilatation.

Deranged actions arising from visceral causes, will be removed with more or less facility, according to their respective natures: they are, generally, well under the control of medical art and many of them are susceptible of present relief. Thus accumulation in the rectum may be removed by injections; of the bladder by the catheter. It will generally be found in such cases, that the removal of the cause will remove the effect, and it may be allowable then to anticipate a favourable progress.

Many of the irritations which have been termed accidental, may be prevented, or obviated, by attention, and generally with immediate advantage.

The effects of others are, however, not easily done away with, particularly of spirituous potations, opium, *&c.*

But of all the exciting causes the mental affections are least under control; indeed, when once called forth, they cease to be under the influence

of the patient herself. When they operate so forcibly as to arrest the uterine action, nothing but the nicest management will have the effect of removing them, and restoring her confidence. Until this is effected, the unfortunate patient, and her attendants, may truly be said to labour in vain.

SECTION VIII.

OF THE DIAGNOSIS.

In forming an opinion of the existence of metastatic determination to muscular parts, it seems desirable, in the first place, to observe that the states of metastatic action taking place, under the actual process of parturition, are to be distinguished from morbid affections of the general system, as well as from states of spurious, premature, or precursory pain, preceding the process, by the evidence which is to be acquired of its actual existence, or commencement; this may be known by the expansion of the cervix uteri, shewn by the formation of the uterine tumor, and the uterus being observed to contract itself firmly during a paroxysm, its orifice being more or less dilated or pressed upon during that contraction; these will be generally preceded by the subsidence of the abdominal tumor, and gelatinous or mucous discharge from the vagina.

A perfect state of the metastatic determination, whether comprising a series of paroxysms, or consisting of a single paroxysm, or occupying a distinct part only of a paroxysm, is readily to be distinguished from uterine action, whether mani-

fested in the form of natural labour, or of painful or partial uterine action, inasmuch as while it exists, no contraction of the uterine muscles can take place. In short, attention to the distinctive characters which have been before laid down, will obviate the possibility of mistaking it.

The difference between it and uterine action, is readily evidenced, in instances where the paroxysm is compounded of distinct states of both actions. Let it be supposed that the paroxysm commences, as is most usual, with the metastatic action,—on applying the hand to the abdomen no contraction is felt, while, at the same time, the patient will be suffering intense agony; continue the hand in its position, and, as the change to uterine action takes place, the uterus will be found gradually growing harder and harder, until it attains the solidity of a board; during this state of contraction, the sensation of pain, if not comparatively gone, will be greatly lessened, and, when the paroxysm has terminated, the patient will state that the former pain was intensely severe and grinding, but that the latter became comparatively less so, having changed to a sense of pressing down, rather than continuing as a state of pain. When, however, a combination of metastatic and uterine action takes place, so that they are co-existent, the diagnosis becomes more difficult, and we can only estimate the presence of

the former, from finding that the uterine efforts, although exerted, are of a minor or insufficient kind, the os uteri not being forcibly acted upon; so that a slow degree of progress takes place, while, at the same time, the accompanying pain partakes of the metastatic nature, being of a grinding kind, and leaving more or less soreness, or lingering disposition, behind it.

Metastatic determination affecting muscular parts, is distinguished from the same kind of translation to the arterial system, by the pain attending it; and from the states of suspension, by the degrees of quiescence which characterize them.

It is unnecessary to attempt any distinctions of the present genus, from the genera of the mechanical and accidental orders,—they must be self-evident.

SECTION IX.

OF THE TREATMENT OF METASTATIC DETERMINATION TO MUSCULAR PARTS.

Admitting that most of the protracted cases of parturition, which have been characterized in the doctrines of the obstretic art, as occupying a longer period than twenty-four hours, depend upon the existence of metastatic determination, it will follow that the consideration of those measures which are best capable of removing it, must constitute a subject of the highest importance.

This importance is not a little enhanced when it is also found that a considerable portion of the more favourable cases, occupying a less portion of time than twenty-four hours, are also referable to the same cause, since it has been attempted to be established, that a case of labour of the natural class should arrive at its termination within six; and of labour, with painful uterine action, within twelve hours from the commencement of the process.

Whenever the case is protracted beyond these periods of suffering, it is most probable that it will be found, so far as it is referable to the nervous order, to be affected more or less by metastatic action of the muscular kind.

The indications of treatment, which naturally present themselves, are threefold:—

1. To effect the removal of the causes of the metastatic state.

2. To obviate the effects of those causes; or, in other words, to relieve the spasmodic affections which are excited by them.

3. If the above indications should be disappointed, to produce a temporary suspension of the case, in expectation that the ensuing efforts may be of the proper uterine kind.

1. *The removal of the Causes of the Metastatic State.*

Could it be established as an invariable axiom, that the removal of the causes would be followed by the cessation of their effects and the restoration of uterine action, and was an easy solution of them attainable, every case might be readily and happily terminated by attention to the present indication only. It, however, unfortunately happens that many of these causes are not only beyond the reach of art, but that their injurious influence would survive their removal; nevertheless, as some of them are capable of being obviated, or relieved, with a consequent cessation, or diminution, of their effects, they well deserve an attentive consideration; it is, however, from the fulfilment of the second indication that the most decided practical utility will be derived.

In treating of the individual causes which have before been stated to influence the production of the metastatic state, the inquiry will be conducted in the order of their previous arrangement, except that in a few instances, consonant states will be noticed under the same head.

The predisposing causes admit of no removal; it is, therefore, to the exciting causes only that our present consideration will be directed.

Irregular pressure of the Contents of the Uterus upon its Parietes or Orifice.—It is out of the power of art to effect any alteration with respect to this cause.

Motions of the Fœtus.—It appears doubtful whether these can exert much influence; when parturition has commenced they are generally diminished, so as to be little perceived. They may be partially restrained by bandaging, and their effects will be relieved thereby; but care should be taken that this is not so tightly applied as to prove uncomfortable.

Thickness of the Membranes.—The obvious mode of removing this cause is to rupture them.

Premature Rupture of the Membranes.—The means of relieving the effects of this cause, in producing increased sensation of the os uteri, will be treated of under that head.

The relaxed state of the uterus, produced by evacuation of the liquor amnii, under an uncon-

tracted state of the uterus, will be best relieved by friction upon the abdomen, and other stimulation of the uterus, through the abdominal parietes, or by gently stimulating the os uteri itself.

Rigidity of the Os Uteri.—When this is deemed to be the cause of metastatic determination, it must be met by topical and general relaxants; the first may be attempted by the use of emollient injections, and fomentations with the steam of warm water; the latter by general bleeding: we venture, however, to assert that simple rigidity will rarely be found to give rise to the present states of derangement.

Highly sensible or inflammatory state of the Os Uteri, or Vaginal Passage.—These may be the effects of different causes, as too early rupture of the membranes, rigidity of the uterine orifice, or contraction of the vaginal passage, producing violent efforts of the uterus to overcome the resistance they afford; or they may be produced by diseased state of the parts, or improper attempts at dilatation, or other interference. In all these cases, the treatment is similar, and must be conducted upon the principle of diminishing local increased action; in particular, every renewal of irritation should be avoided, the parts being allowed as much opportunity as possible of recovering themselves. Cooling and emollient applications may be used to the parts affected, as

well as fomentations, and the steaming with hot water; and, if the situation of the increased action will admit of it, blood may be abstracted by leeches. With these, general bleeding, and the antiphlogistic plan, may be conjoined, according to the urgency of the symptoms, and particularly if the system in general should sympathize.

Obliquity of the Os Uteri.—If the state of sensibility of the uterus will admit of it, an attempt may be made with the finger to draw the oblique orifice into a more favourable position; this has sometimes appeared to be productive of good effect, either in consonance with the above view, or by producing actual dilatation, or by stimulating the uterine orifice.

Diseased State of the Parts.—If any treatment is applicable to this cause during parturition, it must be adapted to the peculiar nature of the disease.

Contractions, or other mechanical obstructions of the Vagina.—These may require surgical assistance.

Rigidity, or want of elastic principle of the vaginal or perinæal Structure.—These must be treated upon the same principles as rigidity of the os uteri.

Disordered state of the Stomach.—Dyspeptic symptoms may be induced by the pressure of the enlarged uterus on the stomach, in which case

their removal is not to be looked for until parturition is accomplished; or they may be the effects of the irritation of improper contents.

It is no minor duty of the accoucheur, to prevent the sources of this disordered state being administered to his patient, which they generally are by the ill-directed zeal of her attendants, in urging her, even in opposition to her wishes and feelings, to take improper ingesta, as heavy indigestible food, wine, spirits, *&c.*, with the view of keeping up her strength during the labour. Except the case is much protracted, the patient will do as well without any food, nor will she often wish for it; if she should, or circumstances make it desirable, it should be plain and light; common gruel might be made to supersede every thing else; tea may also be allowed, and nothing answers the purpose of alleviating thirst so well as toast and water; barley-water, lemonade, oranges, and other grateful sub-acids, may also be allowed her at pleasure.

When the state of the stomach is materially disturbed, its relief may be attempted by gentle stimuli and absorbents, but the use of the more diffusible stimuli should be avoided; nor is it admissible to procure the direct evacuation of the improper contents by emetics. If a spontaneous vomiting occurs, this effect may be favourably produced.

The metastatic state will, however, rarely be produced by the present sources, except they are most imprudently excited; as the system may be considered too habituated to their action throughout the whole period of pregnancy, to be easily affected by them.

Acrimonious contents of the Intestinal Canal. It may not be improper to attempt their evacuation by castor oil, or some other gentle cathartic, and if the pain, griping, or flatus be urgent, an opiate may afford relief, particularly after the effect of purging. They may also be neutralized by absorbents.

Occasionally considerable tenesmus is produced, either by direct acrimony of the contents of the rectum, or by metastasis of the parturient energy. It may be relieved by the injection of starch with forty drops of laudanum. Pressure, made upon the fundament with a napkin or warm cloth, will also be found of much service.

Constipation. The bowels, if confined, may be moved by the use of castor oil, infusion of senna, or any other mild cathartic. If the obstruction, however, exists in the lower part of the canal, or the rectum, the use of injections is indispensable; these may be prepared with common gruel, to which should be added three or four table-spoonfuls of sweet oil and a table-spoonful of common salt. Should the rectum be loaded with indurated

fæces, it may be necessary to break them down with the handle of a spoon and remove them artificially.

Distention of the urinary Bladder.—If the bladder is distended, the catheter must be employed to empty it, in case the patient's own attempts are insufficient. The present is so frequent a cause of metastatic determination, that it is the indispensable duty of the accoucheur to prevent its production; he should inculcate upon his patient the necessity of regular and frequent evacuation, and afford her every opportunity of effecting it, by occasionally leaving the room.

It is remarkable, when the metastatic state has been excited by the present cause, that the evacuation of a very small quantity of urine, will often have the most happy effect in producing its removal.

Calculus in the Bladder.—If necessary to be removed, this can only be effected with propriety, by the operation of lithotomy.

Accidental Irritations.—The chief object is to avoid their application; this may generally be done by attention on the part of the accoucheur, the patient, and her attendants. Their treatment when applied will be sufficiently obvious.

How far administering vinegar as an antidote to the effects of opium, would be serviceable, deserves some consideration.

Mental Affections.—It is of the highest import-

ance in conducting the process of parturition to an early and favourable termination, to regulate properly the mind of the patient. To effect this, the nicest management is often requisite, for at this highly interesting period, the feelings of the human female are exquisitely susceptible of impressions, particularly such as are prompted by a sense of the danger of her situation : so that the slightest cause will elicit her fears, depress her into despondence, and produce every consequent evil of the metastatic or suspended states.

It may, however, be kept in view, that the same mobile state of mind, on which depends the facility of receiving unfavourable impressions, will also, when subjected to proper influence, afford the wary accoucheur an equal power of controling it to her advantage.

The great objects to be held in view in regulating the mind of the patient, are

1. To obviate the depressing passions.

2. To encourage a moderate excitement of the elevating passions.

3. To take care that the latter are not carried into excess.

The same general practical attentions will be found applicable to the whole of these indications, as it is obvious, that to diminish the one, will be equivalent to increasing the other ; for, like the relative effects of caloric, in producing the sensa-

tions of heat and cold, they may be considered as gradations of the same principle; nor is it possible to subject the human mind to a state of apathy.

The attentions requisite from the accoucheur, for the accomplishment of the above objects, may be comprised under two heads.

a. The regulation of his own conduct.

b. The regulation of the conduct of the attendants.

Perhaps the former is of the greatest importance, the latter of the greatest difficulty.

a. The Regulation of the Conduct of the Accoucheur.

It is of importance that the accoucheur should impress his patient with a favourable opinion of himself; and thus acquire her confidence, and convince her that she will be treated not only with skill, but with the most humane and delicate attention.

Although the effecting of this, will materially depend upon her previous opinion of his moral and professional character, it will also be influenced, in no small degree, by his gentlemanly manners and address.

If he can succeed, on his first introduction, in inspiring her with confidence, and banishing her apprehensive timidity, the occurrence of some of

the most depressing passions, at a time when they are most liable to be elicited, will, in all probability, be prevented; for it is well known how easily the pains of parturition are altered, or suspended, in consequence of the emotion or alarm excited by the entrance of the accoucheur. He should be cheerful and urbane in his conversation; in action, prompt, unremitting and decided; his opinions given with candour, should afford every encouragement which the case admits of; but at the same time, with the strictest regard for truth; if any occurrence unpropitious to his wishes takes place, he must not appear agitated or alarmed, but meet it as an event foreseen and expected.

Trivial as the above points may appear, a neglect of them has often produced a most unfavourable influence upon the progress of the case; by precipitating the unfortunate patient into a state of agitation, disappointment, or despondency, with all the consequent protracted evils of the metastatic state.

b. The Regulation of the Conduct of the Attendants.

It is not unusual in the lying-in room, to meet with a number of female attendants, particularly among the lower classes of society, who officiously and ignorantly interfere with the intentions of the accoucheur; by infusing apprehension into the

mind of the patient; or urging her to voluntary exertion to promote the expulsion of the child; or by forcing upon her heavy food, or spirituous, vinous, or other stimulating fluids, with the view of supporting her strength. The effects of such interference are often very injurious, and it is the indispensable duty of the accoucheur to obviate them, as far as possible; but, unfortunately, the violent and obstinate nature of the *sources* from whence they proceed, makes their prevention a point of no ordinary facility, as the *rules of art* will with difficulty apply to them. Amongst other stratagems, the propriety of the patient being allowed to sleep between her pains, may be urged as a motive to induce them to quit the room.

Mothers and other near relatives are improper persons to attend the lying-in room, as their feelings are apt to be too much excited by the sufferings of their afflicted friend, to enable them to refrain from expressions of grief, to the manifest injury of her mind; they will better far promote her interests, in taking care of the family concerns below.

Although the prevention and removal of mental affections chiefly depend upon the regulation of external circumstances, it is possible that some assistance may occasionally be derived from me-

dical art; thus, the irritability of the system may be lessened, and the mind, when depressed, moderately excited by the use of cordials and stimuli, as camphor julep, a few drops of liquid ammonia, spirits of lavender, or small doses of opium; but great care must be taken not to affect the system forcibly, particularly the heart and sensorium.

2. *The Removal of the spasmodic Affections.*

The present indication will be found to embrace the more important part of the treatment, since it will generally happen that the removal of the effects of the metastatic state will be followed by the restoration of uterine action.

These effects consisting of spasmodic actions, it is evident that their removal may be attempted by the use of antispasmodics.

The due and proper application of these are, therefore, the objects of our present consideration.

The antispasmodic means which are applicable to the above purposes may be divided into two classes:—

a. Internal antispasmodics.

b. External antispasmodics.

By internal antispasmodics are meant to be understood, such as are administered through the medium of the stomach, or otherways so applied

as to produce their effects by a general operation upon the nervous system.

External antispasmodics are such as are topically applied to the parts affected, or to points contiguous to them, which, by their local, stimulating, or soothing effects, or the support they afford, produce a cessation or diminution of the spasmodic actions.

a. Of the internal Antispasmodics.

As these act upon the general system, it will be evident, *a priori*, that the use of them is not the most desirable, as, if not administered with caution, they may increase the metastatic disposition, or produce suspension; the former by exciting inordinate action, and the latter by exhausting too rapidly the supply of nervous energy.

They are, therefore, to be used with distrust and circumspection, and it will generally be found that they may be dispensed with.

The internal antispasmodics most deserving of notice, are,

1. Æther.
2. Ammonia.
3. Wine, and spirituous fluids.
4. Camphor.
5. Opium.
6. Abstraction of blood.

The three first are to be considered as highly diffusible stimuli, and, therefore, scarcely admissible.

The effects of æther and ammonia do not, however, appear so permanent, as those of the alcoholic mixtures, and probably principally affect the stomach, by the heat of which they are evaporated soon after being received; they are, therefore, preferable.

Camphor, in its watery solution, is a grateful and reviving stimulus, and does not seem to produce any great arterial excitement; it is doubtful whether it could prove beneficial in removing the spasmodic affections, in such small doses as prudence would authorize the use of.

Opium.—The powerful effect of opium, in the removal of spasmodic pain, is well known; and the use of it, in the present case, is, without doubt, beneficial, and, in protracted parturition, it has been, for a length of time, deservedly extolled. It appears to be particularly useful, where the spasmodic affections are so situated as not to admit of the application of the external antispasmodics; as for instance, in affections of the internal lumbar or psoæ muscles, and other deep-seated spasmodic actions of the intestinal canal, bladder, &c.; in such cases it should not be given in larger doses than thirty or forty drops, which may be repeated according to its effects; if larger

doses are administered, a risk is incurred of inducing suspension of the parturient action.

We do not enter into the rationale of the effects of opium; we believe it, however, to be a direct but peculiar stimulus, and that its sedative effects are secondary, and consequent to primary excitement.

Abstraction of Blood.—Although it has been thought right to introduce the present means, under the head of antispasmodics, it is doubtful how far it is strictly entitled to such an appellation; if so, its principle of action must be different, and opposite to the rationale of the before-named stimuli, as its effects are truly of a directly sedative nature. It is certain, that it has been recommended by eminent professors, as a powerful agent in cases of protracted parturition, which have been supposed to arise from rigidity of parts, the advantage derived being attributed to its relaxant effects; as lessening the tone and diminishing the resistance of the parts, it certainly might facilitate the dilatation, and accelerate the progress; nevertheless, it is allowable to suspect that it may, at the same time, tend to induce a proportionate relaxation of the propelling powers, as the abstraction of the efficient cause of the production of that nervous energy, on which the parturient action depends, is necessarily involved.

It is conceived that its good effects are attri-

butable to the diminished action, and consequent degree of suspension which it produces, the metastatic affections thereby being allowed to cease, and the muscles, which have been acting inordinately, to recover themselves, after which the subsequent renewal of action may prove of the true uterine kind. In this case its use ought to be referred to the next indication.

When required, the blood abstracted may be taken from the arm; it will, however, so seldom be found necessary, that the author has never yet found occasion to resort to it. One disadvantage attends it, that it is often a formidable operation in the opinion of the patient, and may be productive of much mental emotion.

b. Of the external Antispasmodics.

As the action of these is to be considered merely local, and they cannot materially, or directly, influence the general system, they are greatly preferable to the internal remedies above treated of; the advantage to be derived from them will also fully justify the preference.

Nevertheless, admirable as their effects will be found, they are not to supersede attention to the removal of the exciting causes, since, during their continuance, the removal of the spasmodic affections from a given part, will occasionally be followed by its attachment to another part; thus

repeating or keeping up the metastatic state, although in a different situation, and possibly varying the symptoms, so as to manifest another genus of the metastatic state; in the same way as the removal of gouty inflammation from the foot, may be attended with a translation to the head, inducing apoplexy, when the relief of the deranged viscera, upon which it depends, has not been previously procured.

The external antispasmodics which we propose to consider, are,

1. Embrocations.
2. Fomentations.
3. Injections.
4. Warmth.
5. Pressure.
6. Friction.

1. *Embrocations.*—These rubbed upon the parts affected, will be found useful, on similar principles to which they are so universally employed in general practice for the relief of pain. It is most probable, that their good effects depend chiefly upon the warmth and friction conjoined with their use; as these will be considered hereafter, it only remains, in the present place, to notice their medicated properties. The basis of these will be alcohol, camphor, ammonia, æther, and opium; the effects of the whole of which,

seem chiefly to depend upon their stimulating powers, and are too well known to require any farther consideration.

2. *Fomentations.*—The use of fomentations will be found of some importance ; as, independent of their being powerful auxiliaries in the removal of spasm, they afford real comfort to the patient, and the basis of them (a boiling tea-kettle) is generally at hand. Hot water possesses every requisite quality, and, except as a placebo, it will be unnecessary to medicate it. Fomentations may be freely applied to any part of the external surface, and when used should be vigorously persisted in, by keeping up a regular succession of flannels to the parts affected. The greatest disadvantage attending their use, is the communicating moisture to the dress of the patient and the bedclothes ; this may, however, be obviated by proper care. The good effects seem to arise from the warmth imparted, although it is probable that the accompanying moisture is not without its utility.

Besides their good effects as used generally, fomentations seem particularly serviceable in painful affections of the pubic region, pudenda, and perinæum, where other external means are not readily applicable.

3. *Injections.*—The use of injections into the rectum, will be of great and frequent advantage

in the removal of the metastatic effects; particularly when the spasms are referrible to the muscles around the rectum, coccyx, and neighbouring parts, or to the lower part of the intestinal canal, or to the inferior and posterior parts of the bladder. As producing fæcal evacuation they have before been noticed; but there can be no doubt, that from the conjoined application of warmth and moisture, they are also admissible as fomentations, and indeed, in some instances, they afford the only means of making a direct application to the affected parts. With this intention, warm water may be solely used, or it may be rendered anodyne, by the addition of from forty to a hundred drops of laudanum, or directly stimulating, by adding a table-spoonful of common salt; the latter has been greatly and deservedly extolled, and is certainly very efficient in restoring uterine action.

4. *Warmth.*—Besides the warmth excited by the stimulus of embrocations, fomentations, and injections, much benefit may be derived from the direct application of it in a dry state, by a warm hand, or any other medium applied to the part affected; a bag of heated oats, or a large bladder partially filled with hot water, may be advantageously used with this intention.

5. *Pressure.*—It is well known that supporting a muscular part which is acting spasmodically,

will assist materially in preventing or relieving that spasmodic state; this is instanced in various cases of cramps and pains, and in midwifery is familiarly illustrated by the anxiety the patient so commonly expresses, to have her back supported under the paroxysm of pain.

The same assistance, where it is possible to give it, may be advantageously extended, during parturition, to every part affected with spasmodic pain, but more particularly to the abdomen, back, hips, thighs, sacrum, and perinæum. It may be effected by the pressure of one or more hands, and it seems proper to continue the support during the interval, as well as the paroxysm. An excellent mode of adhibiting it will be found in the application of a napkin expanded about the abdomen, and tied tightly round the back; this may be tightened at pleasure by an attendant placed behind, so that a regular and uniform pressure may be kept up to any degree.

6. *Friction.*—Although friction of the abdomen has been recommended as an adjuvant, in producing a more early and proper expulsion of the placenta, the author is not aware that it has, in any instance, been used or treated of for the relief of protracted parturition; he hopes, therefore, that he may, without presumption, assert a claim to originality, in proposing its introduction for such intention.

This state of novelty, and the admirable effects which have, in his private practice, resulted from its use, together with the parental kind of regard which he is to be allowed to indulge in, will, he trusts, be admitted as an excuse, for what might otherwise be considered an overcharged and prolix consideration of it.

On first entering upon the practical duties of midwifery, it became obvious to him, that the effects of parturition were by no means proportionate to what were considered its efforts, and that the pain, which was to be regarded as the measure of those efforts, bore no relation to the degree of progress; that in many instances, a comparatively slight degree of pain would, at one time, produce a rapid advancement of the labour, whereas, at other times, and even in the same individual case, under a series of most severe and unspeakable sufferings, little or no advancement would be made. Although aware that the observation was not new, the facts impressed him strongly; and, as he could recollect no explanation of the inconsistency in the various lectures he had attended, or writings he had studied, the subject was made an object of his serious consideration. He soon became convinced that the unprofitable pains above noticed, were truly, and *ipso facto*, extra uterine; that they produced no effect on the os uteri, or expulsion of the child; and, that they con-

sisted of spasmodic affections of the surrounding parts.

The obvious inference which now presented itself was, that their removal ought to be attempted upon the principle of relieving spasm. Having been long in the habit of employing vigorous friction for the removal of affections of the latter kind, he was naturally induced to extend its use, to answer this new indication; the result exceeded his most sanguine expectation; protracted cases, and that dread of meeting with them, which had been implanted in his mind by the expectation that their occurrence would constitute the most disagreeable and perplexing part of his professional labours, vanished under its use, and he has since continued its employment, with the most happy effects, in a large proportion of the cases which have come under his care.

For a length of time his success was so decided as to encourage in him the flattering expectation, that the practice afforded an almost certain means of overcoming every case of difficulty, which a protracted case of what was termed natural parturition could present; experience has now corrected his juvenile ardour, by evincing that, in many instances, the causes of the protraction are various, and the spasmodic affections too obstinate to be subdued by its use, as well as their

seat too remote to be affected by its application. Yet he still believes, that in a majority of cases the eulogium, which his first experience suggested as due to it, is fully merited.

The author having been thus led to the consideration of what appeared to him a new principle, one fact has accumulated itself upon another, until the whole ultimately arranged itself into the system which is advanced in the present treatise.

Independent of its effects, friction possesses decided advantages over all other modes of relieving spasmodic action in parturition. Its action is entirely local, producing at least, no improper influence upon the general system; its application may truly and literally be said to be always at hand, and, consequently, it affords the readiest mode of assistance which can be offered; and it may be tried under the plea of lessening or relieving pain, without exciting suspicion in the patient that any interference is necessary; while at the same time its administration, when applied to the abdomen, will furnish a constant and correct evidence of its effects, and of the actual efficiency of the paroxysms, from the opportunity it gives of ascertaining whether, and how far, the uterus is acting under those paroxysms.

Friction is, without doubt, beneficial by exciting warmth in the part rubbed, and also in affording

it pressure and support; it is probable also, that it possesses a peculiar *ratio operandi* dependent upon a stimulating action produced amongst the nervous rami of the muscular fibres, by their consequent agitation or concussion, and by which their local or innate irritability (*vis insita*) may become so far exhausted, or changed in its quantity, or susceptibility of receiving nervous impressions, as to give rise to diminished action or quiescence of the moving fibres, with correspondent cessation or diminution of painful sensation. The nervous energy being thus prevented from being expended upon the part affected metastatically, is determined to the proper seat of its action, the uterine muscles.

It has been advanced, that the present genus is characterized by the existence of spasmodic pain of the muscles affected, and soreness on pressure continuing through the interval; the above state of pain, although it occasionally and partially continues or lingers through the interval, is more particularly attendant upon the paroxysm. The application of friction will be found to alleviate or disperse both these symptoms, so that the spasmodic pain will often be entirely removed, the subsequent paroxysms being simply attended by the efforts of expulsion, conjoined more or less with the pains necessarily arising from the dilatation of sensible parts or spasmodic uterine action;

the state of soreness will totally be done away with, so that the patient who, at the commencement of the friction, could scarcely bear the slightest touch, will now suffer the roughest pressure without inconvenience.

This sense of soreness occasionally produces a strong objection on the part of the patient to the use of the friction; and she will, in consequence of the distress accompanying its commencement, earnestly entreat its discontinuance. Her wishes must, however, on no account be complied with, and she ought to be encouraged to support the operation with resolution and patience, under the full assurance (an assurance which will not be disappointed) that the inconvenience of which she complains will speedily vanish under its use; the objection, in reality, constitutes the strongest reason for perseverance, as being a certain evidence of the existence of metastasis, the removal of which is necessary for her welfare, and which the friction will, if persisted in, be almost certain to remove.

The application of friction will, however, rarely be found a painful operation to the patient; on the contrary, if artfully commenced, the relief and comfort experienced from it will both surprise and gratify her, although this happy effect may prove not a little troublesome to the accoucheur himself; the author has occasionally been com-

pelled to keep up his friction, even with both hands at once, for one or two hours without intermission, in consequence of the urgent entreaties or commands of his patient, whose relief from it has been so great, that she would on no account allow him to desist or quit her for a moment.

The length of time required to produce the desired effect will be found different in different cases, according to the nature of the exciting causes; in some the improper action will be removed almost instantly, and as it were by a miracle, so that a case which has been protracted for the greater part of a week under the most intense suffering, without the least progress, has been happily terminated in fifteen or twenty minutes from the first commencement of the friction; in other cases a longer period will be requisite, before any evidence can be gained of its good effects; but it may in general be expected that the paroxysm following the commencement will be combined with uterine efforts, and the pain and soreness which had previously existed, materially lessened.

The spasmodic actions of the part affected may be taken off without the metastatic action being removed; which action will then be determined to a new set of muscles; for instance, if it has previously existed in the abdominal muscles, it

may, on being expelled from thence, fix itself upon the lumbar ones; in this case particular attention should be paid to the exciting causes, which may be considered as powerfully exerting their actions; but the use of friction is not to be relaxed from; on the contrary, a more vigorous application will become necessary, and the back must be rubbed in its turn. The spasmodic pain may now possibly revert to the abdomen, and may be thus made to oscillate at pleasure from one to the other; it will now be requisite to apply the friction to both parts at once, each hand being brought into action, and occasionally a third or fourth may become desirable; this want may be imperfectly supplied by an assistant, who can, if unable to supply the friction, at least keep up warmth and pressure.

In the above case, the operation always requiring much exertion from the practitioner, becomes peculiarly laborious, at least until he is habituated to it; if, however, it multiplies his exertions, and exhausts a portion of his strength, he will find himself amply recompensed by the saving of time, and the satisfaction of having afforded real good to his patient. The old adage that "practice makes perfect," will eventually operate in his favour, and neutralize his exertions; the author has, from practice, acquired so much facility, as to be able to use both hands at the same

time for one or two hours without intermission, and with little fatigue.

It is a feature of no small importance in the effects of friction, that those patients with whom it has been used have, in almost every instance, recovered with remarkable celerity, although in previous and protracted parturitions, where it was not employed, they had sustained much subsequent illness, and deferred recoveries; in short, in the practice of the author, puerperal diseases are comparatively unknown.

It is not only during actual parturition that the use of friction is beneficial; it may also be employed with decided advantage in the states of precursory pain preceding the process, and subsequently in the removal of after-pain.

Friction is more particularly applicable to cases of metastasis affecting the external muscles, as where the spasmodic actions affect the belly, back, hips, sacrum, *&c.*; it will also prove useful in some of the spasmodic affections of the urinary bladder; it may, however, be employed with safety, if not advantage, in every species.

It may be desirable to enter into some detail of what may be termed the art of applying friction. Experience has proved that it is not so efficacious when applied with the palm or flat part of the hand; the friction is then not so regular, the warmth and glow attending it less ex-

cited, and the exertions of the operator are materially increased, nor will its good effect be so decided.

The better mode of applying it is with the ends of the fingers, applied together so as to form the segment of a circle, and moved over the part to be rubbed, in much the same way as the sound is elicited from a tambourine; this must, however, be done with great celerity, making from 130 to 150 motions of the hand in a minute, and, at the same time, with such degree of pressure as will produce considerable warmth and glowing feel in the part. The application should be made to the skin itself, and not through the medium of clothing, and must be vigorously kept up in the above-described manner, and extended with rapidity over the part affected, and, if the spasmodic action should be found to vary its situation, it must instantly follow it.

Notwithstanding it may appear to have produced its full and decided effect, the friction must be persisted in for some time, as it will not unfrequently happen, that, when discontinued, the metastatic action will return; at least it must be occasionally repeated, particularly if any variation in the nature or seat of the pain is observed.

If the state of soreness is considerable, the friction must be cautiously commenced, only a slight degree of pressure being at first used, according

to the sensations of the patient; this must gradually be increased, and it will be found, that, in proportion as it proceeds, the soreness will be diminished, until its full force can be sustained without inconvenience.

In order to perform the operation with comfort to the accoucheur, the bedclothes and dress of the patient should be arranged so as to offer the least possible impediment; for it is singular, how immediately the arm tires if any obstacle is opposed to it; the position of the patient must be regulated by the part requiring assistance, and will generally be obvious: to make the application to the abdomen, she will conveniently lie on the back, but the usual position on the left side will generally be found most convenient. It may be remarked as an useful fact, that the part on which the patient lies is very rarely affected by the spasmodic state, in consequence of the pressure and support given to it.

An inconvenience attending the use of friction is, that it requires much interference about the body of the patient; the feeling respecting this, although at first unpleasant, will soon wear off, particularly when she becomes sensible of the advantage and comfort derived from it.

Although the above use of friction will not be found in every case of metastatic determination to

muscular parts, to remove the metastatic, and restore the uterine, action, it nevertheless deserves to rank as a most powerful agent, in the removal of those states of protracted parturition to which it has been considered applicable; and, from its peculiar advantages in all such cases, merits the first trial. Should it fail, the means which have been previously recommended ought to be resorted to.

By a full and careful attention to the rules laid down, the author's experience leads him to assert the possibility of terminating happily, in a comparatively short period, almost every case of protracted parturition, which can fairly be referred to the present genus.

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3. *The Production of Suspension.*

We now proceed to the third and last indication, which, being seldom likely to be called for in practice, will be dismissed briefly.

Occasionally, cases will occur, in which, notwithstanding every attempt to remove the metastatic state, it will continue fixed and in the full exertion of its baleful influence.

In such case, it may be desirable to produce an alteration in its nature, by adopting means for

suspending, for a time, the action of the parturient energy; after which, its actions may re-commence under more favourable auspices.

This will, probably, be best effected by considerable doses of opium, taking care, however, that such doses incur no risk of producing any very long-continued protraction.

Bleeding would also be an efficacious means of inducing suspension, and some reason has been shewn to consider that its use in protracted parturition is to be attributed to a degree of such production; we are, however, possessed of no experience upon the subject, having never found occasion to resort to any of the above measures.

If, after every attempt, our intentions should be frustrated, and the desired termination alarmingly protracted, instrumental aid must be called in; of this kind of assistance, the forceps can only become necessary, and the system will never be found to have sustained so much injury as to render the use of these desirable before the parts are sufficiently dilated to make their application admissible.

The above may be thought to encourage instrumental interference; but, in an active practice of twelve years, the author has not found it

necessary to apply the forceps a dozen times, and these were cases truly referable to other deviations; on the contrary, he has been successful in a number of protracted cases, under his peculiar treatment, which he believes would otherways have required such interference.

CHAPTER VII.

Genus V.

LABOUR WITH METASTATIC DETERMINATION TO THE ARTERIAL SYSTEM.

"THE paroxysm is unattended by contractions of the uterine muscles, the parturient energy actuating the arterial system."

Species 1. *Labour, with Convulsions.*

"The increased arterial action affects the cerebral organs, and produces convulsions of the epileptic kind."

The author has had so little opportunity of witnessing states of puerperal convulsion, that it is with great diffidence he enters upon the subject; he is aware, that in considering them as the effect of metastatic action, he is involving it in much theory, as the connexion of convulsion with deranged circulation of the arterial system, and determination of the circulating fluid to the brain, is as yet rather presumed than proved; he trusts, however, that the facts to be advanced in con-

firmation of his position, will be such as to justify him in the opinion he has embraced.

Although the attack of puerperal convulsion is frequently sudden and unexpected, certain precursory symptoms in general precede it; these are such as indicate an increased momentum of blood impelled towards the head, as pain of that part, suffusion of the face, impaired vision, singing in the ears, giddiness, *&c.*

The state of convulsion may commence at the latter period of pregnancy, previous to parturition, but most generally occurs during some part of that process; it may also come on subsequently to its termination. When the attack takes place, the face becomes violently contorted, and every part of the muscular system rigid or convulsed; in short, the whole train of symptoms peculiar to the epileptic paroxysm are manifested, and the fit at length terminates in a state of stupor.

In awhile, a renewal of the same symptoms takes place, and this repetition may go on for many hours or days, the attacks becoming more and more frequent as they continue.

It is of importance to inquire into the state of uterine action during this alarming period. Under the state of puerperal convulsion, the parturient paroxysm is apparently wanting; occasionally symptoms of its being about to take place may be

noticed, but they are found speedily to disappear on the supervention of the convulsive state. Yet, notwithstanding this deficiency of the proper paroxysm, the os uteri will, in some cases, undergo degrees of dilatation, so that the child will often be unexpectedly expelled during the fit.

With respect to the above description, it may be noticed, that the previous symptoms are such as manifest determination of blood to the head; and it will scarcely be denied, that the subsequent epileptic state is dependent upon the same derangement of the vascular system, affecting the brain and sensorium. It remains, therefore, simply to show the connexion of the above determination with the metastatic state, as excited by the translation of the parturient energy from the uterus to the cerebral organs.

The convulsive state occurs previously and subsequently to parturition, as well as during that process. There appears nothing in this point contradictory to the theory advanced, as the parturient energy is capable of being called into action at all periods during uterogestation, and does not cease to exert its influence for some days after delivery. That this kind of convulsion is peculiar to parturition, or connected with gestation, cannot be doubted, since, unlike true epilepsy, it is not liable to recur except under such states.

The great evidence to be advanced of the me-

tastatic nature is the want of uterine paroxysm accompanying it, and the remarkable manner in which such paroxysm recedes when the convulsive state is re-established; the remark which has been made by an author who has been frequently quoted, that "they often recur exactly like labour pains *," is a strong confirmation of the opinion, that they are to be considered as substitutes for, or modifications of, such labour-pains. An objection will be started in this place, that although unaccompanied by parturient paroxysm, the puerperal convulsions are not deficient of uterine action, as the dilatation of the uterine orifice may be effected, and the child expelled during their continuance. It is replied, that this dilatation, or expulsion, may be produced by the general spasm or agitation attending the convulsive state, forcing down the uterine contents upon the orifice; or that it may arise from a short and temporary reversion of parturient energy to the uterus; or from some mixture of the uterine with the metastatic action.

Every cause, whether predisposing or exciting, which operates in the production of metastatic determination to muscular parts, will also have a tendency to induce a similar determination to the arterial system; some of these have been particu-

* Burns, p. 337.

larly named as having excited it. The general irritability of the constitution, which has been particularized as a cause, is probably to be looked upon as synonymous with the constitutional state, which has been considered the predisponent cause of metastasis to muscular parts.

Of the exciting causes, Mr. Burns *, after naming uterine irritation, dwells much upon irregularity of the bowels, and most properly inculcates strict attention to the state of them; he likewise particularizes distention of the bladder as having produced the deranged state.

Puerperal convulsion is to be distinguished from those convulsions which occur under a state of exhaustion, as under hæmorrhage, and which are to be considered as mere symptoms of that state. It should also be distinguished from states of hysteria and syncope, which sometimes occur during parturition.

This convulsive state is always attended by the highest danger to the patient; any individual fit may prove fatal from the pressure upon the brain inducing apoplexy, and a repetition of fits will probably exhaust the patient by the injury inflicted upon the sensorium and whole vital functions.

The treatment must be regulated by the following indications:—

* Burns, p. 378.

1. To diminish the state of predisposition or irritability of the general system.

2. To remove the exciting causes.

3. To remove the state of convulsion.

1. The removal of the predisposing causes of disease can rarely be attempted with any decided advantage under the state of actual disease. With respect to the removal of that irritability of the general system which has been supposed to give rise to puerperal convulsion, many practitioners have laid great stress upon the effects of opium given with that intention; its use has, however, been doubted or condemned by others, particularly during the early periods of the affection, when it must be supposed most likely to answer such intention; it is probable that it can only be used with advantage in large doses, so as to suspend the actuating energy; as relieving the irritability of the system upon any other principle, it appears a doubtful remedy.

2. The second indication may be answered by attending to the same rules as are laid down for the removal of the exciting causes of metastasis to muscular parts, to which the exciting causes of the present state are most strictly allied.

3. The third indication distributes itself under the following heads:

a. To take off the pressure from the cerebral organs.

b. To relieve the state of spasm.

c. To restore proper uterine action.

d. To get rid of the convulsive state by terminating the parturition.

a. This part of the present indication is of the highest importance, and is to be effected by the following means, *viz.*:

1. By local evacuation, as cupping, leeches, and section of the temporal arteries or jugular veins.

2. By diminishing the force of the increased cerebral action, by the vigorous application of cold to the head.

3. By depletion of the general system, by venesection of the arm, or by active purgatives.

4. By the excitement of a counter irritation, by the application of blisters to the back, thighs, *&c.*, or by sinapisms. The good effects of vesicatories applied to the head itself seem doubtful, as they appear to produce increased activity of the cerebral arteries.

b. The state of convulsive spasm will be best taken off by the removal of its causes; and it is probable that medical means can do little farther with this intention. Opium, camphor, and musk, have been recommended, of which the former appears to promise most, when carried to such extent as to produce a degree of general

suspension of the nervous activity ; the propriety of using it rests upon very disputed grounds.

c. This part of the present indication is founded upon the author's peculiar views, and has certainly in no respect received the test of experience.

The removal of the exciting causes must operate strongly in restoring the true uterine action; it is possible also, that it might be promoted by stimulating the uterine orifice, or by fomentation of the parts around the uterus, where there is any reason to suppose the translation has been produced by uterine irritation, or by friction.

d. The present has constituted the chief attention of many practitioners, who have considered the delivery of the patient as the best or only effective mode of saving her. There can be no doubt, but the decided change produced upon the whole system by the evacuation of the uterine contents, may and often does immediately take off the convulsive state; the effecting it is, therefore, to be held in view as of high importance.

It must be recollected, however, that the practice involves considerable danger to the child, and may produce much local uterine irritation in the mother ; and therefore it ought to be deferred until we are fully satisfied that no great chance of success is to be anticipated from farther atten-

tion to the previous indications, and that it will be unsafe to trust any longer to them. When decided upon, it must, according to circumstances, be effected by the hand, the forceps, or the crotchet.

But, as prevention is better than cure, the attentive practitioner will carefully obviate the occurrence of this dangerous modification of parturition, by the observation and removal of the precursory and warning symptoms, and particularly by avoiding the application of every exciting cause; after what has been said, the mode of effecting this preventive plan will be sufficiently obvious.

Species 2. *Labour, with Faintness or Hysteria.*

"The increased arterial action affects the cerebral organs, and produces faintness or hysteria."

It is considered, that syncope and hysteria are produced in consequence of some morbid affection of the brain, connected with deranged action of the arterial system, which appears to suffer the same kind of determination to the cerebral organs, as has been supposed to influence the production of convulsion; the essential difference, upon which these respective modifications depend, we do not presume to explain.

The occurrence of this state, although noticed

by professional authors, as a distinct kind of deranged parturition, is neither frequent, nor, when it does occur, in general of material importance.

It must be distinguished from puerperal convulsion, and from those states of syncope or convulsive spasm, which are attendant upon profuse hæmorrhage, or other sources of exhaustion, or upon rupture of the uterus.

It may be relieved by camphor, opium, musk, ammonia, tincture of valerian or lavender, or other antispasmodics; washing the head with cold water will also be found serviceable.

If severe and obstinate, the same treatment as is recommended in states of puerperal convulsion, may become applicable, and even delivery may be necessary.

Species 3. *Labour, with Fever.*

"The increased arterial action becomes sympathetically connected with the nervous system, and produces the phænomena of fever."

It is not proposed to enter into any theory of fever; we believe, however, that it universally embraces a series of sympathetic actions, and it does not appear extraordinary, that the uterine system, during parturition, should participate in them.

The occurrence of fever is not, however, frequent or alarming.

The treatment of it must obviously be constituted upon the general principles, which regulate the practice in states of pyrexia.

CHAPTER VIII.

Genus VI.

LABOUR, WITH DIMINISHED PRODUCTION OF THE PARTURIENT ENERGY.

"SUSPENSION of the parturient actions takes place in consequence of the parturient energy being insufficiently produced."

The deficient production of nervous principle which characterizes the present genus, can only arise from improper states of action of the generating organ, the brain.

It is not impossible, but that such deficient production may precede parturition, and prevent, for a time, the accession of parturient effort; it is, however, as occurring during that process, that our attention will be given to it.

Its history is simple, consisting in a cessation not only of uterine action, but of all the actions which may be considered as modifications of it.

The exciting causes are to be considered as

affecting the active discharge of the cerebral functions, and lessening the production of nervous energy.

They may be,

The application of depressing passions, as fear, timidity, apprehension, anxiety, *&c.* Every practitioner must have witnessed the production of suspension under these mental states.

The application of sedatives, which directly or indirectly produce diminished actions of the vital powers; of these, abstraction of blood, opium, and other narcotics, digitalis, and lead, are the most powerful.

The loss of blood is, certainly, an immediate and direct means of lessening the activity of the functions of the brain.

The effects of opium, and the other narcotics, rest upon more doubtful grounds.

The admission of direct sedatives into medical science, otherways than relates to the effect of abstraction of blood, involves much imperfect theory, as the existence of such a class of medical means is far from being proved; and it is not improbable that their sedative effects ought to be attributed to the exhaustion produced by powerful and rapidly-acting stimuli.

It admits of some doubt, therefore, whether the abuse of opium, *&c.*, as inducing suspension, ought to be referred to the exciting causes of the present

genus, or of the succeeding one of suspension from exhaustion.

There can be no doubt, however, that such means have the power of suspending the parturient actions; and, therefore, their administration requires great caution*.

Morbid states of the brain, such as induce coma, apoplexy, *&c.*, are to be considered as exciting causes of suspension; that state is, however, then to be considered as symptomatic, and referable to those particular diseases by which it has been induced.

The state of suspension being exempt from

* In my first professional attendance upon Mrs. B———, after every favourable progress had been indicated, and a speedy termination anticipated, her pains became suspended, and no further action of the uterus was evidenced for several hours; at length the paroxysms appeared to re-commence, but very soon again disappeared. I now accidentally detected one of her attendants giving her something from a tea-cup, which proved to be a strong solution of opium, and which she admitted she had privately, and frequently, taken to relieve her pains before they became first suspended, and was also in the habit of taking largely when in health. The cause of delay was now evident. She was, at length, after the lapse of many more hours, delivered by the forceps. I afterwards learnt from my father, that he had previously witnessed a similar state of delay in the same patient, with the same result. In the course of time, it was my lot again to attend the same untoward patient; on my first introduction into the house, however, I contrived to steal privately her whole stock of opium; the case went on rapidly, and terminated in two hours.

pain, and other harassing symptoms, is, consequently, not productive of much distress to the patient, nor does it seem to involve much danger; nevertheless, it may require the assistance of the accoucheur in effecting the delivery. The delay which it occasions is a source of great anxiety and disappointment.

It will rarely require any peculiar treatment, as it is generally sufficient to wait with patience until the brain resumes its full functions, when the nervous power will become sufficiently regenerated to re-actuate the uterine muscles.

When it originates from mental causes, it will be of much importance to restore the confidence of the patient, and to obviate every depressing passion.

Gently stimulating cordials, as a moderate use of wine, spirits, camphor, *&c.*, may be also advantageously employed.

In some cases of more important deviations, as in obstinate muscular metastasis, it may be desirable to induce a state of suspension, as a means of removing the metastatic state, in the expectation that the next ensuing action may be of the uterine kind. The use of opium offers the best mode of effecting this; abstraction of blood being scarcely admissible, under the degree of exhaustion which gives rise to the necessity of resorting to such means.

CHAPTER IX.

Genus VII.

LABOUR, WITH EXHAUSTION OF THE PARTURIENT ENERGY.

"SUSPENSION of the parturient actions takes place in consequence of the parturient energy having been exhausted."

This genus embraces such states of suspension as are produced by the exhaustion of long-protracted and painful labour, consequent to the excessive action to which the system has been subjected. It will also include such as have been occasioned by the improper use of the diffusible stimuli, as spirituous potation, wine, *&c.*; and it is probable that opium, and other narcotics, ought to be included in the present head of causes.

It is also an effect of the exciting passions, as joy, anger, *&c.*, when carried to excess, and of all states of high mental excitement.

All these latter causes are considered, not as diminishing the production, but as producing a rapid exhaustion of nervous principle.

The present kind of suspension is not altogether devoid of danger, as there is a risk of the patient sinking under the exhaustion.

With respect to its treatment, the vital powers may be allowed to repose for a time, and to recover themselves, if there appears no danger of the patient sinking under this state of delay.

Or, the action of the brain may be re-excited by cordial and stimulating medicines, wine, broths, and other nutritive means.

Or, it may be prudent to expedite the delivery.

CHAPTER X.

Genus VIII.

LABOUR, WITH DEFECTIVE IRRITATION OF THE OS UTERI.

"**SUSPENSION** of the parturient actions is produced in consequence of the irritation of the os uteri being insufficient to excite the contractions of the uterine muscles."

A state of suspension, produced from deficient irritation of the uterine orifice, is not of great importance, except as it may be connected with more alarming deviations; as when it is produced by recession of the head, consequent to rupture of the uterus, or by malpresentation, *&c.*

The only cases in which it is to be considered as an idiopathic affection, are, where it arises from obliquity of the os uteri not permitting the proper contiguity of the presenting parts with the orifice; in this case it is rather to be looked upon as delaying the commencement of parturition, and will always be obviated by time; or it may be produced by premature evacuation of the liquor

amnii during a state of relaxation from uterine paroxysm, the uterus being then left relaxed around its contents, and those contents consequently less firmly applied to the orifice; in this case, the action will revert when the contractility of the uterus has restored the pressure; when, however, this state of suspension has preceded the commencement of parturition, a considerable length of time, even a fortnight or more, has elapsed before the subsequent parturient actions have been excited.

In these cases, artificial irritation of the os uteri will be found of essential service; or, where the os uteri is obliquely situated, an attempt may be made, with the finger, to draw it into more proper position.

APPENDIX.

IT is proposed, in the form of an Appendix, to attach a few cases, in illustration of the metastatic determination to muscular parts, as well as several other points of opinion and practice, which have been advanced in the course of the essay.

The number of these will be very limited, for two reasons:—

The first reason is, that the author, unfortunately, (and he much regrets the omission, which can only be excused by the harassing and incessant attentions to business, which a country practice requires,) has never been habituated to the taking notes, either of the medical or obstetrical cases, which have occurred in his practice. The number of such cases, as are retained on correct record, are consequently few, compared to what might have been collected, had he been accustomed to preserve the whole of the very interesting cases which he has met with.

Of these few, a small number only have been selected, but these, he trusts, are such as will prove interesting.

A second reason is, that he is aware that no great necessity exists for any such confirmations of the opinions advanced, as the daily experience of every practitioner will furnish such tests as will at once establish or condemn them.

In another point of view they may prove useful; that is, as clinical illustrations of the manner in which such opinions may be practically applied.

CASES.

MRS. P——'s CASES.

March 14th, 1810, Mrs. P——— was taken in labour with her first child. The membranes had ruptured spontaneously in the course of the day; in the evening the parturient paroxysms commenced, and continued throughout the night to increase in strength and frequency, producing a gradual, but rather slow, dilatation of the os uteri, which, in the morning, was about half opened.

The paroxysms now became excessively severe and acute, occasioning most intense suffering. In this distressing state the case continued, without making any real progress, until within twenty minutes of its termination, which took place on the afternoon of the 18th. During this long period of protraction, opiates, fomentations, injections, bandages, friction, and all means which appeared applicable, were made use of, but without effect; at length, after a more than usually vigorous application of the friction, and an ad-

ditional dose of thirty drops of laudanum, bearing down pains came on, and in twenty minutes produced the expulsion of the child.

In the above case, the protraction was undoubtedly of a metastatic nature affecting the muscular parts, and probably induced by the premature rupture of the membranes. With respect to its obstinate resistance of the means used for its removal, it must be recollected that it occurred during the earlier period of the author's practice, when his ideas of the metastatic state were imperfect, and its treatment, in consequence, not so determinately pursued; he has since felt fully convinced that a more vigorous application of the friction, than was actually made, would have produced a more propitious progress.

May 11th, 1811, Mrs. P——— experienced her second parturition. The uterine action was perfect throughout, although combined with spasmodic pain of the parturient organs. A happy termination took place in *two hours* from its first commencement.

January 4th, 1813. Her third parturition took place at this time, and was of a favourable kind.

January 31st, 1814, she was again parturient. The uterine paroxysms commenced between

twelve and one o'clock in the night, and went on for more than an hour, under the most favourable appearances, the os uteri having, in that time, become more than one third part dilated. Her mind, now, however, became all at once impressed with the idea of not doing well, nor could any assurance to the contrary remove the opinion. The paroxysms, which before had literally consisted of bearing down only, became immediately combined with acute pain, and the abdominal and vaginal examinations evinced a total want of uterine contraction; in short, the metastatic state was fully established.

The pain thus existing, being principally confined to the region of the abdomen, friction upon it was commenced; it instantly removed to the back; on rubbing the latter, it reverted to the belly; both hands were now called into action, and a vigorous application was made to each of the suffering parts; the pain ceased, and the uterine action became re-established. The expulsion was effected in much less than an hour.

It remains to notice some remarkable features of the present case. The comfort experienced from the friction was so great, and the return of the metastatic pain so instantaneous, whenever it was discontinued, that the patient would not admit a momentary relaxation of it, even for the purpose of vaginal examination; it was, conse-

quently, continued until the rupture of the membranes made that examination necessary; when, to the author's surprise, the head of the child was found protruding through the os externum.

The whole process of the parturition, during its application, appeared to consist of one continued paroxysm, not expressed by the least indication of pain*, but by an unceasing, forcing, and expulsive kind of nisus, which was only interrupted by the exclamation of "Rub, rub, rub," when the least intermission of the friction took place.

In the above case the metastatic state was most evidently excited by the mental apprehension which immediately preceded it.

It is impossible to conceive a more marked instance of the conversion of the uterine into metastatic action, and of its subsequent and ultimate re-conversion into the uterine action; it also furnishes the rare instance of a labour without painful action, for such must be considered the combination of remarkable phænomena, which succeeded the metastatic state, and characterized the concluding part of the process.

Since the above period, Mrs. P—— has again

* The patient has since admitted that it was not of a painful nature.

undergone the task of parturition; this last case was marked by a combination of painful uterine action, with metastatic muscular affection, which made the operation of friction necessary, and evidenced the great comfort it afforded; in other respects it did not manifest any particularly interesting fact, but terminated favourably in about *six hours.*

—— ——'s CASE.

The Lady of —— —— ——— experienced her second parturition on the night of the 5th and 6th of November, 1817. She had been attended in her first confinement by a most respectable accoucheur, and had suffered a painful and protracted labour. On his first introduction, about nine o'clock, the author was assured that she had scarcely suffered any pain, and, therefore, did not consider it probable that his assistance would be required for the present; she however admitted the existence of regular paroxysms, attended by a bearing-down feel; one of these paroxysms occurring, he had an opportunity of satisfactorily ascertaining, by applying his hand to the abdomen through her dress, and as she sat in her chair, that the uterus was powerfully contracting; and he consequently assured her that he had no doubt of the existence of labour, and of considerable progress.

In the course of the desultory conversation which ensued, she stated that her professional attendant had informed her, that in the earlier period of her first labour, a considerable progress had taken place, and that an early termination might be anticipated; but that notwithstanding it was protracted, and the progress arrested, in a manner which was inexplicable; and added, that it was at length terminated suddenly and unexpectedly. On seeing her again about half after twelve o'clock, the state of paroxysm was much the same, having been regularly exerted. On examination, the os uteri was found about one half-part dilated, and the author consequently wished to have continued in the room; it was, however, requested that he would retire to bed, which he did on being assured that he should be called in the event of the waters discharging, or the paroxysms becoming stronger. About half after four he was summoned, and found the os uteri fully dilated, and the membranes unbroken; his patient, however, still asserted that she had suffered but little pain, and therefore could not conceive the termination near, as she was sensible of nothing like what she had undergone in her former case. Immediately after this she exclaimed *that she had a pain similar to what she had before experienced at* ——. *On examination, the paroxysm was found entirely divested of uterine action*, and every apprehen-

sion felt of the consequent establishment of the metastatic state; however, on rupturing the membranes, the succeeding paroxysm or two fortunately proved uterine, and terminated the labour.

The author is induced to make the following comments upon the above case:

That the protraction attending the first labour was owing to metastatic action, is well evidenced by the patient's description of it.

The present case affords an instance of the advantage to be derived from abdominal examination, in ascertaining the existence of parturient action; for an accurate estimate was formed, without agitating the lady by a proposal for examination, at a time when it would probably have excited the metastatic state, the disposition to which was clearly evidenced by its subsequent occurrence at a time when the case was nearly terminated, and which was, in all probability, to be attributed to the entrance of the accoucheur, under circumstances in which she anticipated that his attentions and interference would become more particularly necessary. It must, however, be admitted, that the temporary metastasis might have been influenced by a too thick or rigid structure of the membranes, seeing that it went off immediately after rupturing them. At the time, the author felt satisfied that the labour would have been terminated materially sooner, had his pre-

sence been permitted, so that he might have had an opportunity of rupturing the membranes at an earlier period.

Upon viewing the whole circumstances of the case, it may be fairly pronounced, to have nearly approached to labour without painful action, although its duration exceeded six hours, as it was marked by an almost total absence of spasmodic pain, excepting the one metastatic paroxysm. Indeed, his patient soon after asserted, that one day's mental anxiety respecting a slight indisposition of her child, was more than adequate to all she underwent during her labour and subsequent recovery.

Mrs. B.'s CASE*.

On the 27th of April 1818, I was called to attend Mrs. B., who was in labour of her third child. On my arrival, I found she had been seriously ill about three hours and a half, but had been rather complaining the whole of the day before. The pains returned about every four or five minutes, and were very severe indeed. She mentioned the circumstance to me of having been five

* For the present case the author is indebted to his friend and partner, Mr. Watson; it is given verbatim from his notes taken at the time.

days in labour of her last child, under the assistance of a female midwife, and that the pains were then entirely confined to the loins. On applying my hand to the abdomen during a paroxysm of pain, I felt very little uterine action present, and concluded immediately that she was suffering under a metastatic state. The mind was calm; the rectum and vesica urinaria empty. Having got her to bed, an examination per vaginam was made, and the state of the labour was as follows: A small portion of the membranes, which seemed extremely thick with a coriaceous feel, distended with liquor amnii, had protruded through the os uteri, its dilatation being just sufficient to admit the points of two fingers in the absence of a pain. There still appeared very little uterine action, though the pains regularly returned with undiminished violence. There was no obliquity of the os uteri, nor did it evince any uncommon state of sensibility. At the commencement of the friction, which I immediately began to employ, she complained of a great deal of pain and soreness in the part, and begged me to desist. I, however, encouraged her to have it continued, by telling her that it would very soon relieve her sufferings, and tend to promote a speedy termination of the labour. I had scarcely employed it five minutes, before the desired effect was produced. The pain, so long as the friction was kept up, was

considerably diminished, and often entirely removed from the back, and the uterine action was at the same time increased. If the friction was for an instant discontinued, the metastatic action immediately returned. She soon found the utility of it, and requested it might be continued, which was done for nearly four hours, at the expiration of which time the head was protruded through the os externum. Nothing more particular happened in the course of the labour, except that the membranes remained unruptured, until within a short time of the birth of the child. The liquor amnii was in great quantity.

The placenta was readily extracted, the uterine action which expelled it being immediately excited, after slightly irritating the os uteri. The rigidity of the membranes, as connected with the excessive quantity of liquor amnii, appears, in this case, to have been the exciting cause of the metastatic state, which, however, was not perfectly complete, but mixed with uterine action.

The following remarks are suggested by a consideration of the foregoing case.

The circumstances attending the use of the friction not only prove its utility, but shew the necessity of persevering in its application, notwithstanding the state of soreness may make it painful or irksome to the patient.

Mr. Watson is probably correct in the causes assigned for the metastatic state; could, however, their nature have been foreseen previous to the termination of the case, or rupture of the membranes, it is probable that the advantage of an earlier evacuation of the waters would have suggested itself, and have materially contributed to an abbreviation of the case.

The present case has also the peculiarity of manifesting the combination of uterine and metastatic action.

The manner in which the placental expulsion was promoted, is a confirmation of the author's opinions and observations upon that point.

Mrs. D.'s CASE.

The author was summoned to Mrs. D., who had been five or six days in labour, under the care of a female midwife. He was informed that she had continued in nearly her present state during the greater part of the above period, and without progress; she was much exhausted, but her pains had not ceased. On making an examination, the os uteri was found well dilated, the waters evacuated, and the head lying very low in the pelvis; the paroxysms affected the back and belly with severe spasmodic pain, and were entirely unaccompanied by uterine action. On ap-

plying friction, this improper state was instantly removed, and the uterine efforts restored; in twenty minutes the child was expelled.

This poor and unfortunate woman, independent of her parturition in an ill state of health, was so exhausted, by her labour and disease conjoined, that she sunk in a few days after delivery, without the appearance of any puerperal disease.

THE END.

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